PRACTICE EXAM 13: RED SEAL CARPENTER INTERPROVINCIAL SIMULATION (100 QUESTIONS)

1. A carpenter is selecting a hand plane for smoothing a door edge after trimming it to fit a tight opening. The carpenter has access to a block plane, a jack plane, a jointer plane, and a smoothing plane. Which plane is best suited for trimming and smoothing a door edge?

A. A jack plane because its medium length and adjustable blade make it ideal for removing material from a door edge and producing a straight, smooth surface in a single pass

B. A block plane because its compact size fits in one hand and is designed for trimming end grain on narrow edges

C. A jointer plane because its extra length ensures the edge is perfectly straight over the full door height

D. A smoothing plane because its short sole follows every contour and produces the finest possible surface

2. A carpenter is selecting adhesive for an exterior structural application — laminating deck beam members that will be exposed to weather. The adhesive must be waterproof and maintain its bond strength when exposed to moisture cycles. Which adhesive type is appropriate?

A. Standard yellow wood glue (aliphatic resin) because it bonds well to pressure-treated lumber surfaces

B. Hot-melt glue applied with a glue gun because it sets instantly and holds under immediate construction loads

C. A structural polyurethane adhesive or resorcinol formaldehyde adhesive that is rated for exterior structural applications and maintains bond strength under sustained moisture exposure

D. White PVA glue applied in a heavy coat because the thicker application compensates for moisture exposure

3. A carpenter is sharpening a drill bit using a bench grinder. While grinding, a spark contacts the carpenter's forearm and causes a small burn. What PPE should the carpenter have been wearing to prevent this injury?

A. A leather apron that covers the chest and legs to prevent sparks from contacting clothing and skin below

B. Long sleeves (rolled down and buttoned) and leather gloves to protect the arms and hands from hot sparks and metal fragments produced by the grinding operation

C. A face-mounted air filter that blows sparks away from the body during the grinding operation on the bench

D. A high-visibility vest that makes the carpenter more visible to coworkers while operating the bench grinder

4. A carpenter is working in a building where spray-applied fireproofing material has been installed on the structural steel above. Dust from this material falls onto the work surface below when disturbed by vibration. Before the 1980s, spray-applied fireproofing commonly contained what hazardous material?

A. Lead-based pigments that were added to the fireproofing for fire resistance and colour consistency

B. Mercury compounds that were used as preservatives to prevent biological growth in the wet spray mix

C. Crystalline silica that was the primary aggregate in all spray-applied fireproofing products before 1990

D. Asbestos fibres that were the primary reinforcement material in spray-applied fireproofing until the early 1980s when their use was restricted

5. A carpenter is using a cordless reciprocating saw to cut through a wall during a demolition task. The carpenter is cutting blind — unable to see what is behind the wall material. What is the primary risk of blind cutting?

A. The saw blade may contact hidden electrical wiring, plumbing pipes, or gas lines within the wall cavity, creating a risk of electrocution, flooding, gas leak, or fire

B. The saw blade may dull prematurely because the hidden material is harder than the visible wall surface

C. The saw motor may overheat because the hidden material provides greater resistance than anticipated

D. The saw vibration may loosen the surrounding wall framing and cause a section of the wall to collapse

6. A scaffold is being dismantled at the end of a project. The dismantling crew begins removing components from the top level and works downward. Why must scaffold dismantling proceed from the top down rather than from the bottom up?

A. Top-down dismantling allows the crew to reuse the lower platforms as work surfaces during the process

B. Bottom-up dismantling is faster but requires more workers and is therefore less cost-effective overall

C. Removing lower components first eliminates the support for the upper sections, which would collapse uncontrollably — top-down dismantling maintains structural stability at every stage

D. Top-down dismantling produces less noise than bottom-up dismantling because the lower sections absorb sound

7. A carpenter is using a table saw to crosscut a short piece of lumber (approximately 200 mm long). The small piece can rotate during the cut and be thrown by the blade. What technique prevents this hazard?

A. Hold the short piece firmly against the fence with one hand while pushing it through the blade with the other

B. Use the mitre gauge to hold and guide the short piece through the blade — never crosscut short pieces freehand against the fence because the piece can rotate between the blade and fence

C. Clamp the short piece to the table saw table surface directly in front of the blade before starting the cut

D. Stack two short pieces together so the combined width provides more surface contact with the fence

8. A carpenter is operating a boom-type MEWP (man lift) near overhead power lines. The minimum safe approach distance to power lines depends on the voltage. For standard distribution lines (up to 750 volts), what is the typical minimum approach distance in most Canadian jurisdictions?

A. 1.0 metre from the nearest energized conductor for low-voltage distribution lines up to 750 volts

B. No minimum distance is required for lines under 750 volts because the voltage is below the lethal threshold

C. 6.0 metres from the nearest conductor regardless of voltage level for all aerial work platform operations

D. 3.0 metres from the nearest energized conductor — many jurisdictions require this distance for lines up to 750 volts, with greater distances for higher voltages

9. A carpenter discovers that the safety chain on a compressed gas cylinder (acetylene, used for cutting) has broken, and the cylinder is standing unsecured on the job site. What is the immediate hazard of an unsecured compressed gas cylinder?

A. If the cylinder falls and the valve is broken off, the high-pressure gas can turn the cylinder into an uncontrolled projectile that travels at lethal velocity — the cylinder must be secured immediately

B. The cylinder may leak gas slowly from the broken chain connection and create a toxic atmosphere

C. The cylinder will corrode faster without the chain because the chain provides cathodic protection to the steel

D. The cylinder label may peel off if it rolls on the ground, making it impossible to identify the gas contents

10. A carpenter is installing a temporary guardrail system at the edge of an elevated floor deck. The guardrail must meet OHS requirements for height, mid-rail, and toe board. What is the required height of the top rail above the walking surface?

A. 900 mm (3 feet) above the walking surface for all temporary construction guardrail installations on site

B. 1,200 mm (4 feet) above the walking surface to match the permanent guardrail height for buildings

C. Between 920 mm and 1,070 mm (36 to 42 inches) above the walking surface, with a mid-rail at approximately half the top rail height and a toe board at least 89 mm high

D. 1,500 mm (5 feet) above the walking surface to exceed the centre of gravity height of the tallest worker

11. A carpenter is carrying a 2.4-metre spirit level across the job site. While turning a corner inside the building, the end of the level strikes a coworker who was not visible around the corner. What job site practice prevents this type of incident?

A. Spirit levels longer than 1.2 metres should be carried vertically so the ends do not extend beyond the body

B. The carpenter should announce their presence and look before rounding corners when carrying long objects, and carry the level vertically or with the leading end raised when navigating congested areas

C. Only two workers together should carry a spirit level longer than 1.8 metres to control both ends at once

D. Spirit levels should be transported in a protective case that absorbs the impact if they strike a worker

12. A carpenter is refuelling a gasoline-powered cut-off saw (concrete saw) in the field. The saw engine is hot from recent use. The carpenter begins pouring fuel into the tank immediately. Why is this practice dangerous?

A. Hot engines consume fuel faster than cold engines, causing the tank to overflow during the refuelling

B. The hot engine block expands the fuel tank, changing its volume and causing inaccurate fuel level readings

C. Hot fuel produces more exhaust emissions that exceed the workplace air quality standards for the site

D. Gasoline vapour from the hot tank and engine can ignite from the heat of the exhaust system, residual sparks, or static discharge — the engine must cool before refuelling to prevent fire

13. A carpenter encounters the abbreviation "BM" on a site plan next to an elevation value of 100.000 m. A small "X" marks the exact point on the plan. What does "BM" represent?

A. "Building Material" — indicating that construction materials are stored at that marked location on site

B. "Base Measurement" — indicating the starting point for all horizontal distance measurements on the plan

C. "Benchmark" — a permanent reference point at a known elevation from which all vertical measurements on the project are taken

D. "Boundary Marker" — indicating a property corner pin set by the surveyor for legal boundary definition

14. A carpenter must calculate the number of risers for a stairway. The total rise from the lower finished floor to the upper finished floor is 2,850 mm. The carpenter wants risers between 175 mm and 185 mm. What is the correct number of risers?

A. 16 risers at 178.1 mm each — calculated by dividing 2,850 by trial values within the range until an even number of risers produces a riser height within the desired range

B. 14 risers at 203.6 mm each — exceeding the Building Code maximum of 200 mm per riser height

C. 20 risers at 142.5 mm each — producing uncomfortably shallow risers below the standard comfort range

D. 12 risers at 237.5 mm each — far exceeding the Building Code maximum riser height requirement

15. A carpenter is reading a roof framing plan that shows the abbreviation "RB" at the peak of the roof with a dimension indicating its size. What does "RB" stand for?

A. "Rafter Brace" — a diagonal support member that prevents the rafters from deflecting under roof loads

B. "Roof Bearing" — the point where the roof load is transferred to the wall structure below the ridge

C. "Ridge Block" — a solid block installed at the intersection of the ridge board and the hip rafters

D. "Ridge Board" or "Ridge Beam" — the horizontal member at the peak of the roof that the rafters bear against

16. A carpenter is estimating lumber for floor joists. The floor plan is 12.0 metres by 8.4 metres. The joists span the 8.4-metre dimension (requiring 10-foot lengths from the supplier). The joists are at 400 mm on centre along the 12.0-metre dimension. Including the starter joist, how many joists are needed?

A. 30 joists based on dividing only the floor length by the spacing without adding the starter joist

B. 31 joists based on (12,000 ÷ 400) + 1 = 30 + 1 = 31 joists for the full layout including the starter

C. 42 joists based on multiplying the joist count by 1.4 for a waste factor before ordering the material

D. 21 joists based on using 600 mm spacing instead of the specified 400 mm for the joist calculation

17. When reading a construction drawing, a carpenter notices a dimension with a wavy line (~) preceding the number, such as "~2400." What does the wavy line indicate?

A. The dimension is exactly 2,400 mm and has been verified by the engineer with precision measurement

B. The dimension is the maximum allowable value and must not be exceeded during construction work

C. The dimension is approximate — not an exact measurement — and the carpenter should verify the actual dimension in the field before proceeding with construction

D. The dimension has been revised from the original drawing and the wavy line indicates the change origin

18. A carpenter is performing a takeoff for stud-framed walls and must account for the plates. For each linear metre of wall, how many plates does a standard load-bearing exterior wall require (bottom plate + single top plate + double top plate)?

A. Three plates per linear metre of wall — one bottom plate and two top plates (single top plate + double top plate) — totaling three times the wall length in linear metres of plate material

B. Two plates per linear metre — one bottom plate and one top plate with no double top plate required

C. Four plates per linear metre — two bottom plates and two top plates for a load-bearing wall assembly

D. One plate per linear metre — a single continuous plate serves as both the top and bottom of each section

19. A carpenter is laying out a building foundation using the 3-4-5 method to verify a 90-degree corner. The carpenter measures 9.0 metres along one foundation wall and 12.0 metres along the adjacent wall. What should the diagonal measurement be for a perfectly square corner?

A. 21.0 metres based on adding the two wall measurements together for the hypotenuse of the triangle

B. 10.5 metres based on averaging the two wall dimensions for the approximate diagonal measurement

C. 108.0 metres based on multiplying the two dimensions together without taking the square root value

D. 15.0 metres based on the 3-4-5 ratio scaled by 3: (9 = 3×3, 12 = 4×3, therefore diagonal = 5×3 = 15)

20. A carpenter is using a rotary laser level on a job site that has heavy equipment operating nearby. The vibration from the equipment causes the laser plane to fluctuate on the grade rod display. What should the carpenter do?

A. Take multiple readings and use the highest value as the correct elevation for conservative accuracy

B. Set up the laser on a stable surface isolated from the ground vibration (such as a tripod with the legs pressed firmly into stable ground away from the vibrating equipment) or wait until the equipment stops

C. Increase the laser rotation speed to smooth out the vibration effect on the projected reference plane

D. Switch to a plumb bob instead because plumb bobs are not affected by ground vibration from equipment

21. A carpenter is reading a detail drawing that shows a wall section with the notation "2 HR FRR." What does this notation mean?

A. The wall has a height restriction of 2 metres as shown on the horizontal reference line in the drawing

B. The wall requires 2 hours of continuous heating before drywall installation for moisture evaporation

C. The wall assembly must achieve a 2-hour fire resistance rating — it must maintain its structural integrity and prevent fire passage for a minimum of 2 hours during a standard fire test

D. The wall was designed 2 hours ago and the notation indicates the drawing is a recent revision timestamp

22. A carpenter is calculating the volume of concrete for a T-shaped footing. The base of the T is 600 mm wide, 250 mm deep, and 15 metres long. The stem of the T is 200 mm wide, 450 mm tall, and 15 metres long. What is the total concrete volume?

A. 3.60 cubic metres based on correctly calculating each section: base = ($0.6 \times 0.25 \times 15 = 2.25$ m³) + stem = ($0.2 \times 0.45 \times 15 = 1.35$ m³) = 3.60 m³ total

B. 2.25 cubic metres based on calculating only the base section and omitting the stem from the total

C. 1.35 cubic metres based on calculating only the stem section and omitting the base from the total

D. 7.20 cubic metres based on doubling the correct answer for a two-sided T-footing that does not exist

23. A carpenter is performing a building layout and needs to establish a right angle from an existing baseline. The carpenter has only a 30-metre tape measure and no other instruments. Using the 3-4-5 method, the carpenter measures 8.0 metres along the baseline from the starting point. At what distance along the perpendicular line and what diagonal measurement will confirm a 90-degree angle?

A. 4.0 metres perpendicular with a 12.0 metre diagonal based on a 2-1-3 ratio for the triangle layout

B. 8.0 metres perpendicular with a 16.0 metre diagonal based on doubling the baseline measurement

C. 5.0 metres perpendicular with a 9.4 metre diagonal based on an approximate 1.6 ratio calculation

D. 6.0 metres along the perpendicular with a 10.0 metre diagonal — using the 3-4-5 ratio scaled by 2: (8 = 4×2, 6 = 3×2, diagonal = 5×2 = 10)

24. A carpenter needs to convert a measurement of 3,658 mm to feet and inches for ordering lumber from a supplier who uses imperial measurements. Using 25.4 mm per inch, what is the correct conversion?

A. 10 feet 0 inches based on dividing by 300 mm per foot instead of the correct 304.8 mm per foot value

B. 12 feet 0 inches based on dividing 3,658 by 25.4 to get 144 inches, then dividing by 12 to get 12 feet

C. 14 feet 5 inches based on dividing by 254 instead of 25.4 and then converting the result incorrectly

D. 8 feet 0 inches based on dividing the millimetre value by 457.2 for a direct millimetre-to-foot conversion

25. A carpenter is laying out wall plates on a concrete slab and encounters a floor drain in the slab near one wall location. The wall bottom plate cannot be continuous across the drain — it must be interrupted. How should the carpenter handle this interruption?

A. Pour concrete over the drain to create a continuous bearing surface for the uninterrupted wall plate above

B. Relocate the wall to avoid the drain entirely because wall plates cannot be interrupted for any reason

C. Cut the bottom plate to fit around the drain, ensuring that the plate ends adjacent to the drain are anchored to the slab and the wall loads are properly supported at the interruption

D. Install the bottom plate directly over the drain and allow the plumber to relocate the drain access later

26. A carpenter is using a transit to plumb a tall concrete form. The transit telescope is tilted to look vertically upward at a target point on the top of the form. If the target point is directly above the instrument's vertical axis, the form is plumb. What ability of the transit makes this plumb check possible that a standard builder's level cannot perform?

A. The transit can measure horizontal distances by reading a stadia rod through the horizontal telescope

B. The transit can rotate 360 degrees horizontally while a builder's level can only rotate in one direction

C. The transit can project a laser beam vertically that is visible on the top of the form in daylight conditions

D. The transit telescope can tilt vertically through 90 degrees to sight straight up, while a builder's level telescope only rotates horizontally and cannot tilt vertically

27. A carpenter is building formwork for a concrete grade beam that must span 4.5 metres between pile caps. The beam is elevated 300 mm above grade. The formwork must support the full weight of the wet concrete during placement. What temporary support method is used beneath the grade beam form during the pour?

A. Compacted earth fill or temporary shoring posts placed at regular intervals beneath the beam form soffit to carry the concrete weight until the beam gains sufficient strength to be self-supporting

B. Steel cables suspended from the pile caps on each side to hold the beam form at the correct elevation

C. The beam form is designed to span the full 4.5 metres without any support because the plywood is rigid

D. Precast concrete blocks stacked beneath the form that remain permanently in place after the pour

28. When placing concrete in a wall form, the vibrator must not contact the reinforcing steel or the form panels directly. What problems does vibrator-to-rebar contact cause?

A. The vibrator overheats when it touches steel because the metal conducts heat away from the head faster

B. The vibrator blade wears faster against the steel rebar and must be replaced after each wall pour contact

C. Vibrator contact with rebar transmits vibration along the bar, potentially disturbing concrete that has already begun to set in other areas and disrupting the bond between the bar and the surrounding concrete

D. The rebar bends under the vibrator force and shifts permanently out of its designed position in the wall

29. A carpenter is placing concrete for a slab-on-grade that will receive a polished concrete finish. The specification calls for a maximum aggregate size of 19 mm. During placement, the carpenter notices that several stones in the mix appear to be 30 to 40 mm in diameter — significantly larger than specified. What should the carpenter do?

A. Continue placement because the larger aggregate provides better strength than the specified maximum size

B. Stop placement and reject the load — oversized aggregate in a polished concrete floor creates visible defects when the surface is ground and polished, and the mix does not meet the specification

C. Remove the visible oversized stones by hand as the concrete is placed and consolidate around the gaps

D. Add water to the mix to make the larger aggregate less visible in the surface paste layer after finishing

30. A carpenter is constructing forms for a concrete wall that has a waterstop at a horizontal construction joint. The waterstop is a flexible PVC strip that is partially embedded in the lower pour and extends upward to be embedded in the upper pour. How must the waterstop be supported during the lower pour to maintain its correct position?

A. The waterstop floats freely in the concrete and self-positions at the correct height during consolidation

B. The waterstop is draped over the top of the form panels and hangs down into the concrete at each side

C. The waterstop is glued to the inside face of the form panel with contact cement before the pour begins

D. The waterstop is wired or clipped to the reinforcing steel at the joint elevation so it remains centred in the wall thickness and at the correct height as the concrete is placed and vibrated

31. A carpenter pours concrete for a residential basement slab. The specification calls for a vapour barrier beneath the slab. The carpenter discovers that the polyethylene sheet has several small puncture holes from construction traffic during placement. Do these punctures need to be repaired?

A. Yes — every puncture hole must be repaired with compatible tape before concrete is placed, because even small holes allow soil moisture and radon gas to migrate upward through the slab, defeating the vapour barrier's purpose

B. No, because the concrete itself provides adequate moisture protection without the vapour barrier below

C. No, because small punctures are self-sealing under the weight of the concrete placed on top of them

D. Yes, but only if the total number of punctures exceeds ten per sheet to reach the repair threshold

32. When a carpenter is screeding a concrete slab, the screed bar is pulled across the wet concrete in a sawing motion while resting on the edge forms or screed rails. What is the primary purpose of screeding?

A. Screeding consolidates the concrete by compacting it under the weight and motion of the heavy screed bar

B. Screeding embeds the coarse aggregate below the surface to create a smooth paste layer for finishing

C. Screeding strikes off the excess concrete to the correct elevation defined by the forms or screed rails, producing a uniformly thick slab at the specified height

D. Screeding mixes the concrete by redistributing the aggregate and paste for a more uniform composition

33. A carpenter is placing concrete for a wall form in freezing conditions. The specification requires the concrete to be delivered at a minimum temperature. What is the typical minimum concrete delivery temperature for cold weather placement?

A. 25°C to provide maximum heat of hydration that keeps the concrete warm throughout the curing process

B. 10°C at the point of delivery, though higher temperatures (up to 20°C) may be specified for thin sections or extreme cold conditions to ensure adequate heat for hydration after placement

C. 0°C because the concrete only needs to be above freezing at the moment it is placed in the form cavity

D. 35°C to provide the maximum thermal energy that prevents freezing during the first 72 hours in the forms

34. A carpenter is stripping wall forms and discovers a horizontal crack running across the wall at approximately the height of the first lift. The crack appears to follow the line where the first and second lifts met during placement. What is this crack, and what caused it?

A. A structural shear crack caused by the lateral earth pressure on the retaining side of the foundation wall

B. A thermal contraction crack caused by the concrete cooling too rapidly after the forms were stripped

C. A vertical settlement crack that has been misidentified as horizontal due to the viewing angle from below

D. A cold joint crack that formed because the second lift was placed too long after the first lift had begun to set — the two lifts did not bond properly, and the resulting weak plane cracked under stress

35. A carpenter is building a form for a concrete stair landing that is cantilevered from a wall. The landing form must support the weight of the wet concrete without any temporary shoring from below (because the space below must remain clear). How is this cantilevered form supported?

A. The landing form is supported by structural steel angles or brackets anchored to the wall that carry the form load, or by form ties through the wall with strongbacks on the opposite side

B. The landing form is suspended from the ceiling above by cables attached to the floor structure overhead

C. The landing form is made from extra-thick plywood that has sufficient rigidity to span without support

D. The landing form rests on inflatable air bags beneath it that are removed after the concrete has cured

36. When curing concrete, the carpenter must prevent the concrete from losing moisture too rapidly during the first seven days. Three common curing methods are wet curing (burlap and water), curing compound (membrane-forming spray), and polyethylene sheet curing. Under what condition is polyethylene sheet curing NOT recommended?

A. When the concrete will receive a painted finish because the compound residue interferes with adhesion

B. When the slab is in an interior location where fire codes restrict the use of plastic sheeting materials

C. When an even, uniform colour is required on the finished concrete surface — polyethylene creates a mottled, uneven colour pattern (called "curing marks") wherever the sheet wrinkles or pools water against the surface

D. When the ambient temperature exceeds 25°C because the polyethylene traps excessive heat from the sun

37. A carpenter is vibrating concrete in a footing and notices that the vibrator tip is difficult to withdraw from the concrete — it feels stuck. What is the most likely cause, and what should the carpenter do?

A. The concrete around the vibrator has begun to set because the vibrator was left in one position too long

B. The concrete mix is too stiff (low slump) and the vibrator head is being gripped by the dense aggregate around it — the carpenter should withdraw the vibrator slowly and steadily while it is still running, never pull a stalled vibrator

C. The vibrator cable has wrapped around a rebar bar beneath the surface and must be unwound manually

D. The footing depth exceeds the vibrator's rated immersion depth and the head has bottomed out on the base

38. A carpenter is constructing formwork for a thick concrete mat foundation (a foundation slab that is 600 mm thick). The mat has heavy reinforcement — two layers of rebar in both directions with chairs supporting the upper layer above the lower layer. What specific formwork concern is unique to a thick mat foundation?

A. The thick mat requires form panels that extend the full 600 mm depth at the perimeter to contain the concrete

B. The mat foundation does not require edge forms because the concrete is placed within the excavation walls

C. The mat requires interior forms that divide it into sections for sequential placement in alternating panels

D. The thick mat generates significantly more heat of hydration than a standard slab due to the large concrete volume — the formwork designer must plan for thermal management to prevent thermal cracking

39. A carpenter places concrete for a sidewalk and must create expansion joints at regular intervals. Expansion joints differ from control joints. What is the fundamental difference between an expansion joint and a control joint?

A. An expansion joint is a full-depth joint with compressible filler that allows the slab sections to move independently in all directions, while a control joint is a partial-depth groove that directs shrinkage cracking to a planned location

B. An expansion joint is used only in walls while a control joint is used only in slabs for different applications

C. An expansion joint is wider than a control joint but both perform the same function in the concrete structure

D. An expansion joint is installed after curing while a control joint is installed during placement of the concrete

40. A carpenter is building forms for a concrete retaining wall and the drawings show weep holes at regular intervals near the base of the wall. What material is embedded in the form to create weep holes?

A. Rebar dowels that are removed after the concrete sets, leaving round holes through the wall thickness

B. Wooden plugs that are drilled out after the forms are stripped to create drainage openings in the wall

C. Short lengths of PVC pipe or similar tubing set through the form at the specified locations so that when the concrete is poured, the pipes remain embedded in the wall and provide permanent drainage openings

D. Copper tubes that corrode over time and create natural drainage openings after years of soil exposure

41. A carpenter is finishing a large exterior concrete slab (a loading dock) that must have a non-slip surface for truck traffic. What finishing technique produces a heavy-duty non-slip surface?

A. A steel trowel finish that produces the smoothest possible surface for tire contact in all conditions

B. A light broom finish that creates shallow texture lines suitable for pedestrian walkways and patios

C. An exposed aggregate finish where the surface paste is washed away to reveal the textured stones below

D. A heavy broom finish or a swirl float finish that creates deep texture grooves providing aggressive traction for heavy truck traffic and equipment on the loading dock surface

42. A carpenter has completed a concrete pour and is cleaning up the site. Leftover concrete remains in the wheelbarrows and chute washout area. Where should this waste concrete be disposed of?

A. Into the nearest storm drain because the small quantity of concrete will be diluted by the stormwater flow

B. Into a designated concrete washout area lined with a containment basin — concrete washwater is alkaline and contains heavy metals that must not enter waterways, storm drains, or natural drainage systems

C. Spread thinly across the unpaved ground surface near the building to create a hard-packed work surface

D. Into the regular construction waste dumpster because waste concrete is classified as inert solid waste

43. A carpenter is installing wood I-joists and must make a penetration for an HVAC duct through the web of a joist. The manufacturer's installation guide specifies maximum round hole sizes and their minimum distances from the bearing points. The carpenter needs a rectangular hole rather than a round hole. What does the manufacturer's guide typically say about rectangular holes in I-joist webs?

A. Rectangular holes are permitted at any location in the web without restriction because the shape is stronger

B. Rectangular holes are not permitted because the sharp corners create stress concentrations that can cause

C. Rectangular holes are permitted only at the manufacturer-specified locations and sizes, with specific requirements for reinforcing the web at the corners of the rectangular opening

D. Rectangular holes require a structural engineer's approval for each individual location regardless of size

44. A carpenter is framing a gable roof and must calculate the theoretical rafter length using the Pythagorean theorem. The total run is 4.0 metres and the total rise is 2.0 metres. What is the rafter line length?

A. 4.47 metres based on $\sqrt{(4.0^2 + 2.0^2)} = \sqrt{(16 + 4)} = \sqrt{20} = 4.47$ metres — this is the slope distance from the wall plate plumb cut to the ridge plumb cut

B. 6.0 metres based on adding the run and rise together for the total diagonal rafter length

C. 8.0 metres based on multiplying the run by two to compensate for the roof slope on both sides

D. 2.83 metres based on calculating the square root of the sum but using only half the run in the formula

45. When framing a floor system over a crawl space, the Building Code requires ventilation of the crawl space to prevent moisture buildup. If the crawl space has a continuous ground cover (polyethylene vapour barrier), what is the required ventilation ratio?

A. 1/300 of the crawl space floor area based on the reduced moisture infiltration from the ground cover

B. 1/150 of the crawl space floor area based on maximum ventilation for unprotected crawl spaces

C. No ventilation is required when a ground cover is installed because the barrier eliminates all moisture

D. 1/500 of the crawl space floor area, which is the standard ratio when a ground cover is properly installed and maintained

46. A carpenter is framing a wall and must install backing for a wall-mounted kitchen range hood vent. The vent duct exits through the wall and requires a 150 mm diameter hole through the sheathing and stud cavity. The studs are 38 × 140 mm (2 × 6). Can the carpenter drill a 150 mm hole through the stud to accommodate the duct?

A. Yes, because a 150 mm hole through a 2 × 6 stud removes only a small percentage of the cross-section

B. No — a 150 mm hole exceeds the maximum allowable hole diameter for a 2 × 6 stud, which is approximately 56 mm (40% of 140 mm); the duct must pass between the studs, and blocking is installed above and below the duct to frame the opening

C. Yes, if the stud is doubled on each side of the hole to compensate for the material removed by the hole

D. No, because holes of any diameter are prohibited in exterior wall studs regardless of wall load conditions

47. A carpenter is installing the second-floor rim joist (band joist) on top of the first-floor wall. The rim joist must be nailed to the top plate of the wall below. What is the nailing pattern for attaching the rim joist to the top plate?

A. One nail at each end of the rim joist board only because the floor joists provide the primary connection

B. Nails at 200 mm on centre driven through the outside face of the rim joist into the plate below it

C. Toenails driven at an angle from the top of the rim joist down into the top plate at each stud location

D. A single row of nails at 400 mm on centre matching the stud spacing in the wall below for alignment

48. A carpenter is building a hip roof and must determine how the hip rafter is sized relative to the common rafters. The hip rafter carries loads from jack rafters on both sides and spans a longer diagonal distance than the common rafters. How is the hip rafter typically sized?

A. The hip rafter is typically one or two standard sizes deeper than the common rafters to carry the greater loads over the longer diagonal span — for example, 38 × 235 mm hip with 38 × 184 mm commons

B. The hip rafter is the same size as the common rafters because it only carries the same load per unit length

C. The hip rafter is always the same width but twice the depth of the common rafters for the concentrated loads

D. The hip rafter size is not related to the common rafter size and is determined only by the engineer's drawings

49. A carpenter is framing a partition wall that will contain a sliding barn door on the room side. Unlike a pocket door, a barn door hangs on an exposed track on the wall surface. The carpenter must provide solid blocking behind the track for the heavy mounting hardware. Why is this blocking critical?

A. The blocking provides a smooth surface for the exposed track to slide against without catching on the studs

B. The blocking reduces noise from the rolling door hardware vibrating against the hollow drywall surface

C. The blocking provides ventilation behind the track to prevent moisture condensation from the door contact

D. The track hardware supports the full weight of the heavy door slab, and the mounting screws must penetrate into solid wood — drywall alone cannot resist the concentrated loads from a heavy sliding door

50. A carpenter is framing a floor opening for a fireplace chase. The Building Code requires that all combustible framing maintain a specific clearance from the fireplace masonry. After framing the opening with doubled headers and trimmers, the carpenter must verify this clearance. What is the minimum clearance from the masonry to the nearest combustible framing?

A. 25 mm clearance on all sides of the masonry for light-frame construction near standard fireplaces

B. 50 mm clearance on all sides — the Building Code requires this minimum distance between combustible framing and masonry chimneys and fireplaces to prevent heat transfer ignition

C. 100 mm clearance on the front face only, with the side and back framing permitted to contact the masonry

D. No clearance is required if the framing lumber is pressure-treated for fire resistance on the contact surfaces

51. When framing an exterior wall, the carpenter must ensure that the wall sheathing provides adequate shear resistance (racking resistance) for the building. The shear capacity of the wall depends on several factors. Which factor has the greatest effect on the shear capacity of a sheathed wall panel?

A. The thickness of the drywall installed on the interior face of the wall for the additional racking contribution

B. The height of the wall because taller walls have proportionally less racking resistance than shorter walls

C. The nail spacing along the sheathing panel edges — closer nail spacing dramatically increases the shear capacity of the wall because more nails provide more total shear transfer between the panel and framing

D. The species and grade of the wall studs because stronger studs increase the racking resistance directly

52. A carpenter is installing a beam that carries concentrated loads from a post above. The beam end must transfer its reaction to the wall below. A steel beam connector (post base or beam seat) is specified at the connection. What is the primary function of this steel connector?

A. The steel connector provides a positive mechanical tie between the beam and the supporting structure below, transferring the loads through the metal connection rather than relying solely on gravity bearing and toenails

B. The steel connector serves only as a fire-protection measure at the beam-to-wall junction for ratings

C. The steel connector prevents the beam from twisting under eccentric loading from the post above it

D. The steel connector is purely decorative and has no structural function at the beam-to-wall connection

53. A carpenter is constructing a cantilevered balcony with floor joists extending 1.2 metres past the exterior wall. The joists are 38 × 235 mm (2 × 10) at 400 mm on centre. The backspan (distance from the cantilever to the first interior support) is 4.0 metres. The cantilever ratio is 1.2 ÷ 4.0 = 0.30, which is within the one-quarter rule. However, the engineer requires that the cantilevered joist tops be sloped slightly toward the building. Why must the cantilevered joists slope inward?

A. Inward slope reduces the visual appearance of deflection at the cantilever tip when viewed from below

B. Inward slope allows the cantilevered joists to expand and contract without pushing against the wall face

C. Inward slope compensates for the upward deflection that occurs at the cantilever tip under dead load only

D. Inward slope ensures that water on the balcony surface drains toward the building rather than pooling at the outer edge — this allows the drainage to be managed at the wall junction with proper flashing

54. A carpenter is installing subfloor panels using both adhesive and mechanical fasteners (screws or nails). The adhesive is applied in a continuous bead on each joist before the panel is placed. What structural benefit does the adhesive provide in addition to the mechanical fasteners?

A. The adhesive increases the panel pull-through resistance by distributing the fastener loads over a wider area

B. The adhesive creates a composite action between the panel and the joist — the two members act together as a unit, significantly increasing the effective stiffness of the floor system and reducing squeaks caused by panel movement on the joists

C. The adhesive provides temporary holding only during construction until the mechanical fasteners are installed

D. The adhesive waterproofs the joist-to-panel joint and prevents moisture from reaching the joist top surface

55. A carpenter is framing a wall with a very large opening — a 5.4-metre garage door opening in a load-bearing wall that supports a second storey and roof above. The header for this opening must carry significant loads. The engineer specifies a steel W-shape beam as the header rather than a wood header. Why is steel specified instead of wood for this wide opening?

A. Steel headers are always less expensive than wood headers regardless of the span and loading conditions

B. Steel headers are required by the Building Code for all openings wider than 3.6 metres in bearing walls

C. A steel W-shape provides the required bending capacity in a shallower depth than a wood header, preserving headroom at the garage door opening — a wood header deep enough for a 5.4-metre span under these loads may be too deep to maintain the required door height

D. Steel headers do not require trimmer studs at the jambs because the steel beam is self-supporting

56. A carpenter is framing roof trusses on a building with a complex roof that includes several valleys and hips. Some trusses in the valley area are progressively shorter — they are called "girder trusses" and "valley set trusses." What is a girder truss?

A. A heavy-duty truss that carries loads from the ends of other trusses (valley set trusses) that bear on it, functioning as a beam that supports multiple trusses rather than just the roof surface directly

B. A standard truss that is longer than the adjacent trusses due to its position at the widest part of the roof

C. A decorative truss that is exposed at the gable end of the building for architectural appearance elements

D. A temporary truss used only during erection that is removed after the permanent trusses are braced

57. When framing a stud wall, the carpenter must ensure that all studs are installed perfectly plumb and that the wall is straight. After raising the wall, the carpenter checks each stud for plumb using a spirit level. What consequence does an out-of-plumb stud have on the finished wall?

A. An out-of-plumb stud has no visual consequence because the drywall is flexible enough to hide the lean

B. An out-of-plumb stud only affects the wall if it is in a load-bearing location near a concentrated point load

C. An out-of-plumb stud affects only the exterior cladding because the sheathing follows the stud contour

D. An out-of-plumb stud creates a bulge or depression in the finished wall surface that is visible through the drywall, especially under raking light, and may cause problems with cabinet, door, and trim installation

58. A carpenter is installing a ridge beam for a cathedral ceiling. The beam is supported by a post at the gable end wall. The post must transfer the beam load down to the foundation. The post sits on the gable end wall top plate. Is the standard gable end wall adequate to carry this concentrated post load?

A. Yes, because the double top plate distributes the post load to all the studs in the gable wall below it

B. The standard gable end wall framing must be reinforced with a dedicated column or built-up post directly beneath the ridge beam post, transferring the concentrated load through a continuous vertical path to the foundation — the standard stud framing may not be adequate for the concentrated beam reaction

C. Yes, because gable end walls are always load-bearing and can carry any concentrated loads from the ridge

D. The post must be eliminated and the ridge beam must span without end support for cathedral ceilings

59. A carpenter is framing a wall and must decide the orientation of each stud — which face points outward and which points inward. For 38 × 140 mm studs, the 140 mm dimension is the depth of the wall cavity. Do all studs need to be oriented with their faces in the same direction?

A. No, alternating stud orientation provides better thermal performance by breaking the thermal bridge path

B. No, the stud orientation does not matter as long as each stud is plumb in the wall frame during assembly

C. Yes, all studs must be oriented with the same face outward to provide a flat, consistent surface for the wall sheathing and drywall on each side — mixed orientations create a wall surface that is not flat

D. Yes, but only studs at opening locations must be oriented consistently while field studs can face any way

60. A carpenter is framing a floor system and must install joist hangers at a flush beam connection. The specification calls for Simpson LUS210 hangers. The hanger capacity listed in the catalogue is based on all nail holes being filled with the specified nails. The carpenter installs only 8 of the 10 required nails, leaving the bottom two header-face nails empty. By how much is the connection capacity reduced?

A. The capacity is reduced proportionally — with only 8 of 10 nails installed, the connection is at approximately 80% of its listed capacity, which may be insufficient for the joist load and creates a code violation

B. The capacity is unchanged because two missing nails out of ten is within the manufacturer's tolerance range

C. The capacity is reduced by 50% because the two bottom nails carry half the total load at the connection

D. The capacity is not affected because the joist hanger itself provides all the load capacity without the nails

61. A carpenter is installing a pre-hung exterior door and must check the threshold height relative to the exterior landing. The Building Code requires that the exterior landing be within a specific height difference of the interior floor. For a standard residential exterior door, what is the maximum allowable step-down from the interior floor to the exterior landing?

A. 25 mm because any step-down at a door threshold creates a barrier-free accessibility violation

B. The maximum step-down must not exceed 200 mm (approximately 8 inches) for standard residential exterior door installations — this ensures safe passage without creating a fall hazard at the doorway

C. 300 mm because standard residential doors allow a taller step-down for design flexibility at entries

D. No maximum is specified by the Building Code — the step-down is determined by the site grading only

62. When installing vinyl siding, the carpenter must account for thermal expansion and contraction. A vinyl siding panel expands approximately 9.5 mm over a 3.6-metre length across the full temperature range. Where is this expansion gap provided?

A. Between each horizontal siding course to allow vertical expansion of the individual panel in the sun

B. Only at the corner posts and J-channels — the factory end of each panel should leave a gap between the siding end and the trim channel

C. At every fastener point by using oversized nail holes that allow the panel to slide back and forth on the nails

D. At the termination points — the siding end should leave approximately 6 to 9 mm of gap at all J-channels, corner posts, and trim pieces to accommodate the expansion in hot weather

63. A carpenter is installing step flashing at a roof-to-wall intersection and reaches the bottom of the intersection where the roof meets the eave. The last piece of step flashing must direct water into the gutter rather than behind the wall cladding. What flashing piece accomplishes this?

A. A kickout (diverter) flashing is installed at the bottom of the step flashing run to redirect the water flow outward away from the wall and into the gutter below

B. A continuous bead of roofing cement is applied at the bottom of the step flashing to seal the termination

C. The last piece of step flashing is extended 300 mm past the wall to reach over the gutter and drip directly

D. A weep hole is drilled through the wall cladding at the base of the step flashing to drain trapped water

64. A carpenter finishes installing a fibre cement siding installation and notices that one course has a slight bow — the siding panel curves outward approximately 5 mm at the centre of a 3.6-metre length. What is the most likely cause of this bow?

A. The panel was stored in direct sunlight before installation and permanently warped from heat exposure

B. The panel was installed during cold weather and expanded as the temperature increased during the season

C. The panel was not nailed at the specified spacing — missing nails at intermediate studs allow the panel to bow outward between the fastened points from its own weight or wind pressure

D. The housewrap behind the panel has wrinkled and is pushing the siding panel outward at the wrinkle

65. A carpenter is installing exterior cladding and must flash a through-wall penetration for a bathroom exhaust vent. The vent hood is installed flush with the cladding surface. What flashing method prevents water from entering the wall at this penetration?

A. The vent hood is installed with no flashing because the damper inside the hood prevents water entry

B. A self-adhesive flashing membrane is applied around the vent hood opening before the cladding is installed — the membrane integrates with the weather-resistive barrier and creates a sealed perimeter that directs water outward

C. A bead of caulking around the vent hood perimeter after the cladding is installed provides a watertight seal

D. The vent hood flange overlaps the cladding on all sides by 25 mm, creating a physical barrier against water

66. A carpenter is installing cedar bevel siding and reaches a location where the wall height changes — a step in the wall surface at a floor line band (the area where the second-storey wall steps back from the first-storey wall). How should the siding courses transition at this step?

A. The siding courses continue at the same height on both sides of the step without any break at the band

B. The courses terminate at the step with a horizontal Z-flashing that directs water outward at the transition

C. The courses are offset by one-half course height at the step for a decorative staggered pattern effect

D. A metal drip edge and a separate starter course are installed above the step, with the upper wall siding courses running independently from the lower wall courses and the Z-flashing protecting the transition

67. A carpenter is installing an exterior door and must ensure the door swings in the correct direction per the Building Code. For a residential front door, which swing direction is standard in Canada?

A. Inward swing is standard because it allows the door to seal against the stops and weatherstripping from the interior, where wind pressure pushes the door tighter against the seal rather than forcing it open

B. Outward swing is required for all residential exterior doors for emergency egress toward the exit direction

C. The Building Code does not specify swing direction — the homeowner selects based on personal preference

D. Alternating swing directions are required on multi-door entries for balanced emergency egress flow

68. When installing asphalt shingles on a roof with a slope between 2/12 and 4/12 (a low-slope application), the installation requirements differ from standard-slope roofs. What additional requirement applies to low-slope shingle installations?

A. The shingle exposure must be doubled on low-slope roofs to reduce the number of courses and speed up

B. Only architectural (laminated) shingles can be used on low-slope roofs because they are heavier and resist wind better

C. A double layer of underlayment (or self-adhesive ice and water shield membrane covering the entire roof deck) is required beneath the shingles to provide a secondary waterproofing layer because the shallow slope allows water to back up under the shingles more easily

D. The shingles must be installed vertically rather than horizontally on low-slope roofs for improved drainage

69. A carpenter is installing a continuous soffit vent and must verify the free vent area. The product specification states the vent has a "net free area" of 46.5 cm^2 per linear metre. Why is the "net free" area different from the total opening area?

A. The net free area accounts for the reduction caused by the screening material (insect screen) that covers the vent openings — the screen mesh reduces the actual airflow area below the total opening size

B. The net free area is always exactly half the total area because the vent is perforated on only one side

C. The net free area includes the area of the solid portions of the vent in addition to the open perforations

D. Net free area and total opening area are always identical because the screening has no measurable effect

70. A carpenter is installing exterior window trim and must decide the order of installation for the four pieces: two side casings, one head casing, and one sill (or stool extending to the exterior). What is the correct installation sequence?

A. Sill first, then both side casings, then the head casing last — this bottom-to-top sequence ensures each upper piece laps over the one below for proper water shedding

B. Head casing first, then both side casings, then the sill last to build the frame from top to bottom

C. All four pieces are pre-assembled as a unit on the workbench and installed as a single frame around the window

D. The side casings first, then the head, then the sill because the sides establish the width for the head piece

71. A carpenter is installing a rain screen wall assembly with horizontal furring strips for a vertical board-and-batten cladding. The horizontal furring creates horizontal drainage channels behind the vertical cladding. What problem can horizontal channels create for water drainage?

A. Horizontal channels direct water horizontally rather than vertically, potentially trapping water at each furring strip if drainage holes are not provided at regular intervals through the horizontal strips

B. Horizontal channels provide better drainage than vertical channels because water follows the path of gravity

C. Horizontal channels have no effect on drainage because the cladding prevents water from reaching them

D. Horizontal channels increase the insulation value of the wall by trapping air in horizontal compartments

72. A carpenter has completed an exterior cladding installation using wood siding. Before the final painting or staining, the carpenter must apply a water-repellent preservative to all cut ends and back-primed surfaces. Why is treating cut ends especially important?

A. Cut ends expose the end grain, which absorbs moisture at 10 to 15 times the rate of the face grain

B. Cut ends are at a much higher risk of rapid moisture absorption through the exposed end grain, which causes the siding to swell, cup, and crack at every cut location — sealing the end grain with a water-repellent preservative prevents this concentrated moisture uptake

C. Cut ends attract insects that bore into the exposed wood grain for nesting within the siding material

D. Cut ends have a rougher texture that paint does not adhere to without a primer coat applied first

73. A carpenter is installing a metal roofing panel system on a commercial building. The panels run from the eave to the ridge as continuous sheets. The ridge detail must allow the panels from both slopes to terminate while providing weather protection at the ridge. What component is installed at the ridge?

A. A standard asphalt ridge cap identical to those used on shingle roofs to seal the ridge joint with cement

B. The metal panels from opposing slopes are bent over the ridge and overlapped for a folded metal seal

C. A manufactured metal ridge cap (a pre-formed ridge flashing) that covers the joint between the two opposing metal panel edges at the ridge, with closure strips (foam or rubber profiles) that seal the corrugated panel profile against wind-driven rain and snow

D. A continuous bead of structural sealant applied along the ridge to bond the two opposing panels together

74. A carpenter is installing aluminum fascia and discovers that the aluminum coil stock has been stored on end and has developed a permanent curve (oil-canning). When installed, the curved panels reflect

light unevenly, creating a visible distortion. What can the carpenter do to minimize this oil-canning effect?

A. Run the coil stock through the brake with a slight reverse bend (back-bend) to straighten it before forming the final fascia profile, reducing the visible distortion on the installed surface

B. Install the curved panels with the concave side facing outward so the sun exposure flattens them over time

C. Heat the aluminum panels with a heat gun to anneal them back to a flat condition before installation

D. Apply a dark-coloured paint to the aluminum that absorbs light uniformly and hides the oil-canning

75. A carpenter is installing sheathing tape on the exterior sheathing joints before the housewrap is applied. The tape must create a continuous air barrier at the sheathing joints. What surface condition is critical for the tape to adhere properly?

A. The sheathing surface must be wet to activate the adhesive on the tape for a strong permanent bond

B. The tape must be installed at temperatures above 0°C because the adhesive does not bond in freezing conditions

C. The sheathing surface must be free of dust only; moisture and temperature have no effect on adhesion

D. The sheathing surface must be clean, dry, and frost-free, and the tape must be applied at temperatures within the manufacturer's specified range for the adhesive to develop a permanent bond

76. A carpenter is installing vinyl siding starter strip at the base of the wall. The starter strip provides the locking mechanism for the bottom edge of the first siding course. If the starter strip is not level, what problem results?

A. The starter strip level has no effect because each successive course is self-levelling as it locks in place

B. Every course above the starter strip follows the same deviation — if the starter strip is not level, every visible siding course across the full wall height will show the same out-of-level line, producing crooked shadow lines

C. Only the first two courses are affected because the third course and above self-correct the level deviation

D. The starter strip cannot be out of level because it is a factory-manufactured component with built-in levelling

77. A carpenter is installing drywall on a wall that has a steel stud backup at a window opening. The steel studs have 22-gauge flanges. What type of drywall screw must be used for this installation?

A. Type W (coarse thread) screws designed for maximum holding power in wood framing applications

B. Standard wood screws with Robertson heads that are compatible with both wood and steel framing

C. Type S (fine thread) screws that are designed to tap into the thin metal flanges of steel studs without stripping through the metal

D. Self-drilling screws with a drill-point tip designed for heavy-gauge structural steel framing connections

78. A carpenter is installing hardwood flooring and must determine the correct direction to run the planks. The floor joists run north-south. What is the standard recommendation for plank direction relative to the joists?

A. The hardwood planks should run perpendicular to the floor joists for maximum structural support — this orientation allows the flooring nails to penetrate into the subfloor and joists rather than only into the subfloor

B. The hardwood planks should run parallel to the joists for easier installation without splitting at the joist edges

C. The plank direction relative to the joists does not matter because the subfloor provides adequate support

D. The planks should run diagonally at 45 degrees to the joists for maximum floor stiffness and rigidity

79. A carpenter is constructing a stairway and encounters a situation where the headroom clearance at the upper portion of the stair is insufficient — the ceiling above the stair encroaches on the required headroom. What is the minimum headroom clearance required above any point on a residential stairway?

A. 1,500 mm from the nosing line to the ceiling above for the minimum headroom clearance requirement

B. 1,800 mm from the nosing line to the ceiling above for the minimum headroom at every point along the stair

C. 2,100 mm from the nosing line to the ceiling above for adequate headroom in residential applications

D. 1,950 mm (6 feet 5 inches) from the nosing line to the ceiling above — the standard Building Code minimum headroom for residential stairways measured vertically from the stair nosing to the soffit above

80. A carpenter has installed a pre-hung interior door and discovers that the door drags on the carpet when it swings open. The gap between the door bottom and the subfloor was adequate before the carpet was installed. What is the simplest correction?

A. Shim the door frame upward by the carpet thickness and re-secure the jamb to the rough opening above

B. Trim the bottom of the door slab by the thickness of the carpet plus the carpet pad to restore adequate clearance

C. Replace the carpet with a thinner product that does not interfere with the door swing in the room

D. Raise the hinge positions on the jamb by the carpet thickness to lift the door above the new floor surface

81. When installing crown moulding at an outside corner, the carpenter uses a mitre joint — both pieces are cut at 45 degrees (for a standard 90-degree corner). The mitre joint tends to open over time as the wood shrinks. What technique prevents the outside corner mitre from opening?

A. Drive a finishing nail through the mitre from one side to the other to lock the joint faces together permanently

B. Apply a thick bead of caulking inside the joint before closing it to create a flexible seal at the mitre faces

C. Glue the mitre faces and pin the joint with a brad nail — the glue prevents the wood from shrinking at the joint line, and the nail holds the joint tight while the glue cures

D. Install a metal corner bead behind the crown moulding at the outside corner to provide a rigid backup

82. A carpenter is installing a floating laminate floor and reaches a doorway between two rooms. The doorway has no threshold or transition strip yet. The flooring runs continuously from one room through the doorway and into the next room. Both rooms are the same level. Should the carpenter install a transition strip at this doorway?

A. No transition strip is needed if the same flooring is continuous through the doorway and the combined room dimension in the flooring direction does not exceed the manufacturer's maximum continuous run

B. A transition strip is always required at every doorway regardless of whether the same flooring continues

C. A transition strip is needed only if the two rooms have different floor levels requiring a reducer strip

D. A transition strip should be installed at every doorway as a design element even with continuous flooring

83. A carpenter is installing a pre-hung interior door in a bathroom. The bathroom has a standard exhaust fan for ventilation. The Building Code requires a minimum gap beneath the bathroom door for ventilation airflow when the door is closed and the fan is running. What is the typical minimum gap required?

A. 6 mm because the bathroom fan provides mechanical ventilation that supplements the door gap airflow

B. 15 mm gap for minimal airflow that satisfies the code while maintaining privacy at the bathroom door

C. 38 mm gap because the large opening provides maximum airflow for the exhaust fan intake requirement

D. Approximately 20 to 25 mm gap (some codes specify 25 mm) beneath the bathroom door to provide adequate makeup air for the exhaust fan to operate effectively

84. A carpenter is installing kitchen wall cabinets and must ensure they are level and aligned. The cabinets are 750 mm tall and will be installed with the top edge at 2,130 mm above the finished floor. What reference line does the carpenter establish on the wall before installation?

A. A level line at the bottom of the cabinets (1,380 mm above the floor) using a laser level or spirit level

B. A level line at the top of the cabinets (2,130 mm above the floor) that serves as the alignment reference for the upper edge of all wall cabinets in the run

C. A level line at the midpoint of the cabinets (1,755 mm above the floor) where the shelf brackets align

D. No reference line is needed because each cabinet is individually levelled with a spirit level during installation

85. A carpenter is installing tile backer board on a shower wall and must detail the junction between the backer board and the bathtub flange. What is the critical relationship between the backer board and the tub?

A. The backer board must rest directly on the tub flange for a solid, supported bottom edge connection

B. The backer board must overlap the outside of the tub flange with a 6 mm gap sealed with silicone sealant

C. The backer board should overlap the outside face of the tub flange by 12 mm, with a 3 to 6 mm gap at the bottom sealed with silicone — water running down the backer board drips into the tub rather than behind the flange

D. The backer board should stop 25 mm above the tub flange with the gap filled by a grout bed for rigidity

86. A carpenter is installing a vanity countertop and discovers that the back wall is not straight — it bows inward 8 mm at the centre. If the countertop is pushed tight against the wall at the ends, a gap appears at the centre. What technique produces a tight fit against the irregular wall?

A. The carpenter scribes the countertop back edge to the wall contour — marking the wall profile onto the countertop with a compass scriber and trimming the countertop to match the wall's actual shape

B. The carpenter applies a thick bead of caulking along the back edge to fill the gap between the countertop and wall

C. The carpenter shims the countertop forward at the ends to match the gap at the centre for a uniform reveal

D. The carpenter cuts the countertop 8 mm narrower so a consistent gap exists along the entire back edge

87. When installing interior door casing, the carpenter sets the casing back from the jamb edge by a consistent distance called the "reveal." What is the purpose of the reveal?

A. The reveal allows the door to swing past the casing without the casing interfering with the door slab edge

B. The reveal provides space for the door stop to be installed between the casing and the jamb face surface

C. The reveal reduces material waste by allowing the carpenter to use narrower casing on wider jamb frames

D. The reveal creates a visual shadow line that defines the transition from the jamb to the casing and conceals minor alignment imperfections between the jamb edge and the casing — without the reveal, any misalignment is immediately visible

88. A carpenter is installing wainscoting with raised panels in a dining room. The panels are set within a frame of stiles (vertical members) and rails (horizontal members). The panels must float within the frame — they are not glued or pinned. Why must the panels float?

A. Floating panels reduce noise transmission through the wainscoting assembly from one room to the next

B. Floating panels allow the solid wood panels to expand and contract with humidity changes without cracking the frame or the panel — glued or pinned panels split or push the frame apart when they expand

C. Floating panels are easier to replace if damaged because they can be slid out of the frame without tools

D. Floating panels create a small air gap behind the wainscoting that provides insulation against the wall

89. A carpenter is finishing a stairway and must install the skirt board (stair stringer trim) along the wall side of the stair. The skirt board runs along the wall following the stair slope, with the treads and risers butting against it. How must the skirt board be installed relative to the treads?

A. The skirt board is installed first (before the treads and risers), and the treads and risers are scribed and cut to fit tight against the skirt board face — this produces the cleanest joint with no gap between the tread and the skirt

B. The treads and risers are installed first, and the skirt board is applied over them from the wall side

C. The skirt board is cut with a sawtooth notch matching the tread and riser profile for an interlocking fit

D. The skirt board is installed plumb (vertical) rather than parallel to the stringer slope for a uniform height

90. A carpenter is installing a medicine cabinet in a bathroom wall between two studs. The cabinet is a recessed type that fits within the wall cavity. After cutting the drywall opening, the carpenter discovers a horizontal fire blocking member within the wall at the cabinet height. What must the carpenter determine before removing the blocking?

A. Whether the blocking is structural (supporting a point load from above) and whether removing it violates the fire code — if the blocking provides fire stopping at a concealed space transition, it must not be removed without providing alternative fire protection

B. Whether the blocking contains electrical wiring that would be exposed if the blocking is removed

C. Whether the blocking is original construction or a later addition that can be removed without consequence

D. Whether the blocking is pressure-treated lumber that requires special disposal if removed from the wall

91. A carpenter is renovating a bathroom in a house built in 1975. The existing floor tiles are 12 × 12 inch vinyl tiles adhered with a dark-coloured mastic. Before removing these tiles, what must the carpenter suspect and verify?

A. The tiles may contain lead-based pigment that becomes airborne when the tiles are broken during removal

B. The mastic adhesive may contain petroleum solvents that are flammable when exposed during removal

C. The tiles may delaminate explosively when heated by demolition tools due to the chemical composition

D. Both the tiles and the black mastic may contain asbestos — vinyl floor tiles and their adhesives from this era are among the most common asbestos-containing materials found in residential renovations

92. A renovation project involves installing a new kitchen island with a granite countertop, sink, and gas cooktop. The island is not attached to any wall. What code requirements must the carpenter address for the kitchen island?

A. Only electrical outlets are required because the island does not contact any wall for plumbing or gas

B. The island must have electrical outlets (every countertop space wider than 300 mm must have an outlet), the plumbing must have proper venting and drainage, the gas line must be properly connected by a licensed gas fitter, and the countertop must be adequately supported

C. The island requires a building permit only if it exceeds 2 square metres in total countertop surface area

D. Only the gas cooktop requires a permit; the sink and electrical outlets are considered minor renovations

93. A carpenter is removing a non-bearing partition wall during a renovation. After stripping the drywall, the carpenter discovers that the wall contains three electrical cables, a cold water supply line, and a heating duct that passes through the stud cavity. All services must be addressed before the wall framing can be removed. What is the correct sequence for disconnecting these services?

A. Electrical circuits are de-energized and locked out first (because they pose the greatest immediate danger), then the water supply is shut off and drained, and finally the HVAC duct is disconnected — each service is safely terminated or rerouted before the framing is removed

B. The HVAC duct is disconnected first because it is the largest obstruction to removing the wall framing

C. All three services can be disconnected simultaneously by a team of three tradespeople working at the same time

D. The water line is disconnected first because water damage from an accidental break is the most expensive

94. A carpenter is performing an energy retrofit on a 1960s bungalow. The existing walls have no insulation. The carpenter plans to drill holes in the exterior sheathing and blow dense-pack cellulose into the wall cavities. Before proceeding, what must the carpenter verify about the wall construction?

A. That the roof has adequate ventilation to compensate for the reduced heat loss through the insulated walls

B. That the siding material can withstand the drilling without cracking or delaminating during the process

C. That the wall cavity is clear of obstructions — horizontal fire blocking, diagonal let-in bracing, plumbing, electrical wiring, and other obstructions within the stud bays must be identified to ensure complete and uniform insulation fill without voids

D. That the foundation wall below has already been insulated before the above-grade walls are addressed

95. A carpenter is adding a bathroom to the second floor of an existing house. The new bathroom will be located above the kitchen. The bathroom will have a bathtub, toilet, and sink. What structural concern must be addressed for the floor framing beneath the new bathroom?

A. The existing floor joists may need to be reinforced to carry the additional weight of the bathtub when filled with water, plus the weight of the tiled floor assembly and the fixtures — the carpenter must verify that the existing joists can carry these concentrated loads

B. The floor requires no reinforcement because all residential floor systems are designed for bathroom loads

C. Only the area beneath the toilet requires reinforcement because the toilet creates the heaviest point load

D. The floor joists only need to be reinforced if the bathroom exceeds 5 square metres in total floor area

96. During a renovation, a carpenter removes old siding from an exterior wall and discovers that the original builder did not install any weather-resistive barrier (housewrap or building paper) between the siding and the sheathing. The sheathing shows signs of moisture staining but is structurally sound. What should the carpenter do before installing the new siding?

A. Install the new siding directly over the existing sheathing because the original building survived decades

B. Install a weather-resistive barrier (housewrap) over the existing sheathing, properly integrated with all window, door, and penetration flashings, before applying the new siding — this corrects the original deficiency and protects the wall assembly from future moisture damage

C. Paint the existing sheathing with a waterproof coating to create a moisture barrier before the new siding

D. Replace all the existing sheathing with new panels that have a factory-applied WRB on the exterior face

97. A carpenter is performing a renovation that involves adding a second storey to an existing single-storey house. The structural engineer has reviewed the existing foundation and determined it is adequate for the additional loads. The first-floor walls are framed with 38 × 89 mm (2 × 4) studs at 400 mm on centre. Can the existing first-floor walls support the second-storey addition?

A. The structural engineer must evaluate whether the existing first-floor 2×4 wall studs have adequate capacity to carry the additional dead and live loads from the second storey and roof — reinforcement or sister studs may be required if the existing studs are overstressed

B. All 2×4 walls are automatically adequate for supporting two storeys because the Building Code allows it

C. The 2×4 walls must be completely replaced with 2×6 walls before the second storey can be constructed

D. Only the exterior walls need evaluation because interior walls do not carry loads in a single-storey house

98. A carpenter is renovating a kitchen and must install new upper cabinets on a wall that previously had no cabinets. The existing drywall was applied directly to concrete masonry unit (CMU) blocks with adhesive — there are no studs behind the drywall. How can the carpenter securely mount the upper cabinets?

A. Use standard drywall screws driven into the CMU blocks through the drywall for a secure attachment

B. Use toggle bolts through the drywall that expand behind the drywall and grip the back surface for holding

C. Use concrete masonry anchors (such as Tapcon screws or sleeve anchors) driven through the drywall and into the CMU blocks at each cabinet mounting point — these provide the pull-out resistance needed to support the cabinet, countertop, and contents

D. Glue the cabinets directly to the drywall surface using construction adhesive and temporary braces

99. A carpenter is renovating a heritage building and must repair a damaged section of ornate exterior cornice. The original cornice was constructed from built-up wood mouldings. The damaged section measures approximately 1.2 metres. The carpenter must match the existing profile exactly. What is the correct approach?

A. Install a modern simplified profile that approximates the original but uses standard stock mouldings

B. Take a cross-section template of the undamaged original profile and have a millwork shop produce custom mouldings to match, then install the matching pieces to blend seamlessly with the existing cornice

C. Remove the entire cornice and replace it with a new design that reflects the building's heritage character

D. Fill the damaged area with exterior-grade wood filler and sculpt it to match the adjacent profile by hand

100. A carpenter completes a major renovation and the homeowner asks whether the renovation needs to be disclosed when the home is sold in the future. What is the correct advice?

A. Renovations done with a building permit do not need to be disclosed because the permit documents exist

B. Only renovations that cost more than $50,000 need to be disclosed during a future real estate transaction

C. Renovations are private matters between the homeowner and the contractor and are never disclosed

D. Major renovations — especially structural modifications, additions, and changes to mechanical systems — should be disclosed with supporting documentation (permits, inspection reports, engineering drawings) during any future sale to protect both the seller and buyer

Practice Exam 13: Answer Key and Explanations

1. A — A jack plane (approximately 350 to 380 mm long) is the ideal choice for trimming a door edge. Its medium length bridges minor irregularities in the edge while removing material efficiently, and its adjustable blade depth allows the carpenter to take fine shavings for a smooth finish. A block plane is too short for full-length door edges, and a jointer plane is unnecessarily long for this task.

2. C — Structural polyurethane adhesive or resorcinol formaldehyde adhesive is rated for exterior structural applications and maintains full bond strength under sustained moisture exposure, freeze-thaw cycles, and UV exposure. Standard yellow glue and white PVA glue are not waterproof — they soften and fail when exposed to repeated wetting, making them unsuitable for exterior beam lamination.

3. B — Long sleeves (rolled down and buttoned) and leather gloves protect the arms and hands from hot sparks and metal fragments produced by the grinding wheel. The forearm burn occurred because the carpenter's sleeves were likely rolled up, exposing bare skin to the spark shower. Eye protection (safety glasses or face shield) must also be worn during all grinding operations.

4. D — Spray-applied fireproofing materials manufactured before the early 1980s commonly contained asbestos fibres as the primary reinforcement material. When this fireproofing is disturbed by vibration, cutting, or demolition, the asbestos fibres become airborne and can be inhaled, causing mesothelioma, asbestosis, and lung cancer. Testing must be performed before any disturbance.

5. A — Blind cutting through a wall creates a risk of contacting hidden electrical wiring (electrocution), plumbing supply lines (flooding), plumbing drain lines (contamination), or gas lines (fire/explosion). The carpenter must investigate the wall cavity before cutting — using an electronic stud finder with wire detection, checking drawings, or making inspection holes to identify concealed services.

6. C — Removing lower scaffold components first eliminates the structural support for the upper sections, which would collapse uncontrollably under their own weight. Top-down dismantling ensures that the remaining structure below is always complete and stable, providing a safe working platform for the crew removing the upper components.

7. B — Short pieces freehand-cut against the fence can rotate between the fence and the blade, becoming trapped and thrown violently. The mitre gauge holds the piece securely and guides it through the blade in a controlled, straight path. The fence and mitre gauge should never be used simultaneously for crosscuts because this traps the piece between the blade and fence.

8. D — Many Canadian jurisdictions require a minimum 3.0-metre approach distance from energized conductors up to 750 volts for boom-type aerial work platforms. Higher voltages require progressively greater distances — up to 7.0 metres or more for high-voltage transmission lines. The specific distance varies by jurisdiction and must be verified with the local authority.

9. A — A compressed gas cylinder contains gas at extremely high pressure (up to 2,500 psi). If the cylinder falls and the valve shears off, the pressurized gas escapes through the broken valve opening, turning the heavy steel cylinder into an uncontrolled rocket that can penetrate walls and kill anyone in its path. All cylinders must be secured upright with chains or straps.

10. C — The Building Code and OHS regulations require temporary guardrail top rails between 920 mm and 1,070 mm (36 to 42 inches) above the walking surface. A mid-rail at approximately half the top rail height prevents workers from falling between the top rail and the platform. A toe board at least 89 mm high prevents tools and materials from being kicked off the edge.

11. B — The carpenter should announce their presence verbally ("coming around the corner") and visually check before rounding corners when carrying long objects. Long materials like spirit levels, lumber, and conduit extend beyond the carrier's field of vision and can strike workers who are not visible around corners. Carrying the level vertically reduces the hazard radius.

12. D — A hot engine and exhaust system can ignite gasoline vapour that rises from the fuel tank during refuelling. Gasoline vapour is heavier than air and pools around the engine, where the hot exhaust manifold, exhaust pipe, or residual sparks can ignite it. The engine must be shut off and allowed to cool before the fuel cap is opened and refuelling begins.

13. C — "BM" stands for "Benchmark" — a permanent, precisely surveyed reference point at a known elevation. All vertical measurements on the project (footing elevations, floor levels, beam heights, grade levels) are referenced to this single datum point. The benchmark is typically set on a permanent, immovable object — a brass cap, iron pin, or concrete monument — that will not be disturbed during construction.

14. A — Dividing 2,850 by trial values: 2,850 ÷ 16 = 178.1 mm per riser. This falls within the desired range of 175 to 185 mm and is below the Building Code maximum of 200 mm. Other trial values: 15 risers = 190 mm (at the top of range), 17 risers = 167.6 mm (below range). The carpenter selects 16 risers at 178.1 mm as the best fit.

15. D — "RB" stands for "Ridge Board" or "Ridge Beam" — the horizontal member at the peak of the roof that the rafters bear against or are supported by. A ridge board is a non-structural alignment member; a ridge beam is a structural member that carries rafter loads. The context and the dimension shown indicate which type is specified.

16. B — Number of joists = (length ÷ spacing) + 1 = (12,000 ÷ 400) + 1 = 30 + 1 = 31 joists. The "+1" accounts for the starter joist at the beginning of the layout. This basic count does not include doubled joists at openings or additional joists at bearing walls — those are added during the detailed takeoff.

17. C — The wavy line (~) preceding a dimension indicates an approximate measurement — not an exact dimension. The carpenter must verify the actual dimension in the field before proceeding. Approximate dimensions are used when the exact measurement depends on site conditions that could not be determined precisely during the design phase.

18. A — A standard load-bearing exterior wall requires three plates per linear metre: one bottom plate, one top plate, and one double (cap) top plate. For a 10-metre wall, the plate material required is 3 × 10 = 30 linear metres of plate stock. This is a fundamental material takeoff calculation for wall framing.

19. D — Using the 3-4-5 ratio scaled by a factor of 3: one side = 3 × 3 = 9.0 m, adjacent side = 4 × 3 = 12.0 m, diagonal = 5 × 3 = 15.0 m. If the diagonal measures exactly 15.0 metres, the corner is a perfect 90 degrees. Any deviation from 15.0 metres indicates the corner is out of square.

20. B — Ground vibration from heavy equipment causes the laser compensator to oscillate, producing fluctuating readings on the grade rod detector. The carpenter should set up the laser on a stable surface isolated from the vibration (a tripod pressed into firm ground away from the equipment path) or wait until the equipment stops operating before taking critical elevation readings.

21. C — "2 HR FRR" means the wall assembly must achieve a 2-hour fire resistance rating — tested to a standard fire curve, the assembly must maintain structural integrity, prevent fire passage, and limit temperature rise on the unexposed side for a minimum of 2 hours. This rating determines the drywall type, thickness, fastener schedule, and joint treatment required.

22. A — Base volume = 0.6 × 0.25 × 15 = 2.25 m^3. Stem volume = 0.2 × 0.45 × 15 = 1.35 m^3. Total = 2.25 + 1.35 = 3.60 m^3. For composite cross-sections like T-footings, L-footings, and stepped footings, the carpenter calculates each rectangular component separately and adds them together.

23. D — Using the 3-4-5 ratio scaled by 2: baseline = 4 × 2 = 8.0 m, perpendicular = 3 × 2 = 6.0 m, diagonal = 5 × 2 = 10.0 m. If the diagonal measures exactly 10.0 metres, the angle between the baseline and the perpendicular is exactly 90 degrees. This is the standard field method for establishing right angles.

24. B — 3,658 mm ÷ 25.4 mm/inch = 144.0 inches. 144 ÷ 12 = 12.0 feet exactly. This is the metric equivalent of a standard 12-foot lumber length. Recognizing common metric-to-imperial equivalents (2,438 mm = 8 feet, 3,048 mm = 10 feet, 3,658 mm = 12 feet) speeds up material ordering.

25. C — The bottom plate is cut to fit around the drain, with the plate ends adjacent to the drain securely anchored to the slab. The wall framing above the interrupted plate must be supported — a header or blocking spans the gap, and the studs above are supported by the header. The drain access must remain functional after the wall is framed.

26. D — A transit telescope can tilt vertically through 90 degrees — from horizontal to straight up (or down). This vertical tilt capability allows the transit to sight directly upward at a target on top of a tall form, verifying that the target is directly above the instrument's vertical axis. A builder's level telescope rotates only horizontally and cannot tilt vertically.

27. A — The grade beam form is elevated above the ground and must support the full weight of the wet concrete during placement. Compacted earth fill beneath the form provides continuous support, or temporary shoring posts are placed at regular intervals to carry the concrete weight. After the concrete gains sufficient strength to span between the pile caps, the temporary support is removed.

28. C — Vibrator contact with rebar transmits vibration energy along the full length of the bar. In areas where the concrete has already begun to stiffen, this transmitted vibration disturbs the bond between the bar and the surrounding concrete, weakening the critical steel-to-concrete interface. The vibrator should be inserted near — but not touching — the reinforcement.

29. B — Oversized aggregate in a polished concrete floor creates visible defects when the surface is ground — the larger stones produce different exposure patterns and colour variations that stand out against the specified aggregate matrix. The mix does not meet the specification and must be rejected. The supplier must deliver a replacement load at the correct maximum aggregate size.

30. D — The waterstop must be wired or clipped to the reinforcing steel at the construction joint elevation so it remains centred in the wall thickness and at the correct height during concrete placement and vibration. Without positive attachment, the waterstop can shift, tilt, or be pushed to one side by the concrete flow, reducing its effectiveness as a water barrier.

31. A — Every puncture in the vapour barrier creates a pathway for soil moisture and radon gas to migrate upward through the slab into the building interior. Even small holes allow significant moisture and gas passage over time. All punctures must be repaired with compatible tape (usually a polyethylene-compatible tape) before concrete is placed.

32. C — Screeding strikes off the excess concrete to the elevation defined by the edge forms or screed rails, producing a uniformly thick slab at the specified height. The sawing motion cuts through the wet concrete while the straight edge of the screed bar defines the finished surface plane. Screeding is the first finishing operation after placement.

33. B — The typical minimum concrete delivery temperature for cold weather placement is 10°C at the point of delivery. Higher temperatures (up to 20°C) may be specified for thin sections or extremely cold conditions. The concrete must arrive warm enough to maintain adequate hydration temperature after placement, accounting for heat loss to the cold forms and ambient air.

34. D — A horizontal crack at the lift line is a cold joint — the second lift was placed too long after the first lift began to set. The two lifts did not bond properly, creating a horizontal weak plane in the wall. Cold joints leak water, reduce shear capacity, and are visible on the concrete surface. Proper lift timing and vibrator penetration into the previous lift prevent cold joints.

35. A — A cantilevered landing form with no shoring below must be supported by structural elements anchored to the wall — typically steel angles, brackets, or kicker braces bolted to the wall, or form ties through the wall with strongbacks on the opposite side. These elements carry the concrete weight during placement and transfer it to the building structure.

36. C — Polyethylene sheet curing creates a mottled, uneven colour pattern on the concrete surface wherever the sheet wrinkles, overlaps, or pools water against the concrete. These "curing marks" are permanent and highly visible on exposed architectural concrete. For uniform colour, wet curing (burlap and water) or curing compound is preferred.

37. B — The concrete mix is too stiff (low slump) and the aggregate is gripping the vibrator head. The carpenter should withdraw the vibrator slowly and steadily while it is still running — the vibration liquefies the concrete around the head and allows extraction. Never pull a stalled vibrator — it will be trapped by the stiff concrete and become embedded.

38. D — A thick mat foundation contains a large volume of concrete that generates significant heat during hydration. The interior temperature can rise 50 to 70°C above the ambient, while the surface cools quickly. This temperature differential creates thermal stresses that can crack the mat. Thermal management (insulating blankets, cooling pipes, or mix modifications) prevents thermal cracking.

39. A — An expansion joint is a full-depth joint with compressible filler (asphalt-impregnated fibreboard or closed-cell foam) that separates adjacent slab sections completely, allowing them to move independently in all directions — expansion, contraction, and vertical settlement. A control joint is only a partial-depth groove that directs shrinkage cracking to a planned location but does not allow independent movement.

40. C — Short lengths of PVC pipe or similar tubing are set through the form at the specified weep hole locations before the concrete is placed. When the concrete cures, the pipes are permanently embedded in the wall, providing drainage openings that allow groundwater behind the wall to drain through to the collection system on the interior face.

41. D — A heavy broom finish or a swirl float finish creates deep texture grooves in the concrete surface that provide aggressive traction for heavy truck traffic. The deep texture channels also direct water away from the contact surface, maintaining grip in wet conditions. The texture must be deep enough to remain effective after years of heavy traffic wear.

42. B — Concrete washwater is highly alkaline (pH 12 to 13) and may contain heavy metals from the cement. It must be collected in a designated concrete washout area with a containment basin that prevents the washwater from entering storm drains, waterways, or natural drainage systems. Environmental regulations require containment of all concrete waste on construction sites.

43. C — Rectangular holes in I-joist webs are permitted only at manufacturer-specified locations and sizes, with specific reinforcement requirements at the corners. Sharp corners create stress concentrations that can initiate cracking under load. The manufacturer's guide specifies maximum sizes, minimum distances from bearing, and whether web stiffeners or reinforcement are required at each rectangular opening.

44. A — Rafter line length = $\sqrt{(\text{run}^2 + \text{rise}^2)} = \sqrt{(4.0^2 + 2.0^2)} = \sqrt{(16 + 4)} = \sqrt{20} = 4.47$ metres. This is the theoretical slope distance from the heel plumb cut at the wall plate to the ridge plumb cut. The carpenter adds the overhang length to this for the total rafter length including the tail.

45. D — When a continuous polyethylene ground cover is installed and properly maintained over the crawl space floor, the required ventilation ratio is reduced to 1/500 of the crawl space floor area. The ground cover dramatically reduces moisture infiltration from the soil, decreasing the ventilation needed to maintain acceptable humidity levels in the crawl space.

46. B — A 150 mm hole through a 140 mm deep stud would remove the entire stud width — far exceeding the maximum allowable hole diameter (approximately 40% of 140 mm = 56 mm). The duct must pass between the studs, with blocking installed above and below the duct to frame the opening. The blocking maintains the stud module for sheathing nailing.

47. A — The rim joist is typically nailed at 200 mm on centre through the rim into the plate below. This close spacing provides a secure connection that resists both uplift forces and lateral sliding. The nailing pattern must meet the Building Code requirement for the specific connection type.

48. A — The hip rafter carries concentrated loads from jack rafters on both sides and spans a longer diagonal distance than the common rafters. This greater loading and longer span require a deeper cross-section — typically one or two standard sizes deeper than the common rafters — to resist the increased bending forces without excessive deflection.

49. D — A barn door track supports the full weight of the heavy door slab (typically 25 to 40 kg for a solid wood or panel door). The mounting hardware concentrates this weight at a few bolt points along the track. If the bolts only penetrate drywall, the drywall will fail under the sustained and dynamic loads. Solid blocking behind the drywall provides reliable wood-to-wood fastening.

50. B — The Building Code requires a minimum 50 mm (2-inch) clearance between all combustible framing and masonry chimneys and fireplaces. This clearance prevents heat conducted through the masonry from raising the temperature of the adjacent wood to its ignition point. The clearance must be maintained on all sides, from the foundation to the roof.

51. C — Nail spacing along the sheathing panel edges is the single most significant factor affecting shear wall capacity. Closer nailing (for example, 100 mm instead of 150 mm on centre) increases the number of nails transferring shear forces between the panel and the framing, proportionally increasing the wall's total shear resistance.

52. A — A steel beam connector provides a positive mechanical connection that transfers loads through the metal hardware rather than relying solely on gravity bearing and toenails. The connector resists uplift, lateral displacement, and rotation at the connection, maintaining the structural load path under all loading conditions including wind and seismic forces.

53. D — The inward slope ensures that water on the balcony surface (rain, snowmelt) drains toward the building wall rather than pooling at the outer edge or draining over the edge onto surfaces below. At the wall junction, proper flashing collects the water and directs it outward through a controlled drainage path.

54. B — Construction adhesive creates composite action between the subfloor panel and the joist — the two members act together as a single structural unit (like a T-beam) rather than as separate layers. This

composite action significantly increases the effective floor stiffness, reduces deflection under load, and eliminates the panel-on-joist movement that causes squeaks.

55. C — A steel W-shape beam provides equivalent bending capacity in a significantly shallower depth than a wood header. For a 5.4-metre span under multi-storey loads, a wood header deep enough to carry the loads may be 400 to 500 mm deep — consuming most of the wall height above the door. A steel beam achieves the same capacity in approximately half the depth.

56. A — A girder truss is a heavy-duty truss designed to carry loads from the ends of other trusses (valley set trusses, hip set trusses) that bear on its top chord. It functions as a beam within the truss system, collecting and transferring the accumulated loads from multiple tributary trusses to the supporting walls below.

57. D — An out-of-plumb stud creates a bump or depression in the finished wall surface that is visible through the drywall, especially under raking light (light from the side). The deviation also causes problems with cabinet installation (the cabinet does not sit flat), door installation (the jamb follows the crooked wall), and trim installation (gaps behind the casing).

58. B — The standard gable end wall framing is designed to carry distributed loads (siding, sheathing, wind), not concentrated point loads from a ridge beam. A dedicated column or built-up post must be installed directly beneath the ridge beam post, extending through the wall to the foundation through a continuous vertical load path.

59. C — All studs must be oriented with the same face outward. Mixed orientations create slight variations in the wall surface plane because lumber dimensions vary between the face and edge surfaces. This inconsistency produces a wall surface that is not flat, which is visible through the drywall and causes problems with cabinet and trim installation.

60. A — With only 8 of 10 nails installed, the hanger connection is at approximately 80% of its listed capacity. Each nail carries a proportional share of the total load, and leaving any holes empty reduces the connection's rated capacity proportionally. The Building Code and manufacturer require all nail holes to be filled with the specified nail type and size.

61. B — The maximum step-down from the interior floor to the exterior landing at a residential door must not exceed approximately 200 mm (8 inches). A greater step-down creates a fall hazard, especially

in low light, when carrying objects, or for persons with mobility limitations. The landing must also be at least as wide as the door and extend at least 900 mm in the direction of travel.

62. D — The expansion gap is provided at all termination points — J-channels, corner posts, and trim pieces. The siding panel end should leave approximately 6 to 9 mm of gap within each receiving channel. This gap allows the panel to expand in hot weather without buckling. In cold weather, the gap widens as the panel contracts.

63. A — A kickout (diverter) flashing is installed at the bottom termination of a step flashing run where the roof meets the wall at the eave. The kickout redirects the accumulated water from the step flashing run outward into the gutter rather than allowing it to flow down behind the wall cladding, where it would cause concealed rot and mould.

64. C — A fibre cement panel that bows outward between fastened points indicates that one or more intermediate nails are missing. Fibre cement is rigid and heavy — without nails at every specified stud, the unsupported section bows outward from its own weight and wind pressure. Adding the missing nails at the intermediate studs corrects the bow.

65. B — A self-adhesive flashing membrane applied around the vent hood opening integrates with the weather-resistive barrier behind the cladding. The membrane creates a sealed perimeter that directs any water reaching the penetration outward and away from the wall cavity. Caulking alone (without membrane) eventually fails and allows water intrusion.

66. A — The siding courses terminate at the step transition, and a horizontal Z-flashing protects the exposed horizontal surface. Above the step, a new starter course begins the upper wall siding independently from the lower courses. The Z-flashing prevents water from the upper wall from flowing behind the lower wall siding.

67. A — Inward swing is the standard for Canadian residential exterior doors. When the door is closed, wind pressure pushes the door tighter against the stops and weatherstripping from the interior side, compressing the seal. An outward-swinging door would be pushed open by wind, breaking the weatherstripping seal and potentially allowing the door to blow open.

68. C — On low-slope roofs (2/12 to 4/12), the shallow angle slows water drainage and allows water to back up under shingles during rain, ice dams, and wind-driven conditions. A double layer of

underlayment (or complete coverage with self-adhesive ice and water shield membrane) provides a secondary waterproofing layer that protects the roof deck if water penetrates beneath the shingles.

69. B — The insect screen covering the vent openings reduces the actual airflow area. The screen mesh blocks a portion of the total opening — typically reducing the effective area by 25 to 50% depending on the mesh size. The "net free area" is the actual usable airflow area after accounting for this reduction.

70. A — The sill is installed first at the bottom, then the side casings are installed resting on the sill ends, and finally the head casing is installed on top of the side casings. This bottom-to-top sequence ensures each upper piece overlaps the one below for proper water shedding — water running down the head casing flows onto the side casings and down to the sill.

71. A — Horizontal furring strips create horizontal channels that can trap water at each strip rather than allowing it to drain vertically. Unless drainage holes are cut through the horizontal strips at regular intervals, water pools behind the cladding at each strip, saturating the housewrap and potentially entering the wall cavity.

72. B — End grain exposed by cutting absorbs moisture at dramatically higher rates than face grain — 10 to 15 times faster. This rapid moisture absorption causes localized swelling, cupping, cracking, and paint failure at every cut location. Sealing end grain immediately with water-repellent preservative prevents this concentrated uptake.

73. C — A manufactured metal ridge cap covers the joint where opposing panel edges meet at the ridge. Closure strips (foam or rubber profiles matching the panel corrugation pattern) seal the open corrugations beneath the ridge cap, preventing wind-driven rain and snow from entering the building through the corrugated profile gaps.

74. A — Running oil-canned coil stock through the brake with a slight reverse bend (back-bend) counteracts the permanent curve and produces a flatter finished profile. This is a standard sheet metal technique for straightening material that has taken a set from improper storage or coil memory.

75. D — Sheathing tape adhesive requires a clean, dry, frost-free surface and application within the manufacturer's specified temperature range to develop a permanent bond. Dust, moisture, frost, and cold temperatures all prevent the adhesive from achieving full contact and strength, producing a tape joint that eventually peels and fails.

76. B — The starter strip establishes the level reference for the entire siding installation. Every course above locks into the previous course and follows its line. If the starter strip is out of level, every visible course across the full wall height replicates the same deviation, producing crooked horizontal lines that are especially visible on long, uninterrupted walls.

77. C — Type S (fine thread) drywall screws are designed specifically for steel stud framing. The fine thread pitch allows the screw to tap into and hold in the thin metal flange of the steel stud without stripping through. Type W (coarse thread) screws are designed for wood and will strip through thin steel flanges.

78. A — Hardwood flooring planks should run perpendicular to the floor joists. This orientation allows the flooring nails (driven through the tongue at an angle) to penetrate through the subfloor and into the joists for maximum holding power. Running parallel to the joists means nails penetrate only the subfloor, providing less withdrawal resistance.

79. D — The Building Code requires a minimum headroom of 1,950 mm (6 feet 5 inches) measured vertically from the stair nosing line to the soffit (ceiling) above at every point along the stairway. This clearance prevents head injuries during normal ascent and descent and during emergency evacuation.

80. B — Trimming the bottom of the door slab by the carpet thickness plus the pad thickness restores the required clearance beneath the door. This is the simplest and most common correction — the door is removed, the bottom is trimmed with a circular saw or hand plane, and the door is rehung.

81. C — Gluing the mitre faces bonds the wood fibres at the joint, preventing them from shrinking apart. The brad nail holds the joint tight under clamping pressure while the glue cures. Once cured, the glued joint resists the seasonal wood movement that opens unglued mitres. This glue-and-pin technique is the professional standard for all exterior mitre joints.

82. A — If the same flooring runs continuously through a doorway and the total dimension in the plank direction does not exceed the manufacturer's maximum continuous run (typically 8 to 12 metres), no transition strip is needed. The flooring moves as a unified field. A transition strip is only required where the continuous run exceeds the maximum or where different flooring materials meet.

83. D — A 20 to 25 mm gap beneath a bathroom door provides adequate makeup air for the exhaust fan. When the door is closed and the fan is running, air must enter the bathroom from the hallway to replace

the air being exhausted. Insufficient gap starves the fan of makeup air, reducing its effectiveness and causing negative pressure that can draw sewer gas through dry traps.

84. A — The carpenter establishes a level reference line at the bottom of the cabinets (1,380 mm above the finished floor). This line serves as the support ledger height — a temporary ledger board is often installed at this line to support the cabinets during installation. The bottom-of-cabinet reference ensures all cabinets in the run are at a consistent height.

85. C — The backer board should overlap the outside face of the tub flange by approximately 12 mm, with a 3 to 6 mm gap at the bottom sealed with silicone sealant. This overlap ensures that water running down the backer board surface reaches the flange and drips into the tub rather than running behind the flange into the wall cavity.

86. A — Scribing transfers the wall's actual irregular profile onto the countertop back edge using a compass scriber. The carpenter trims the countertop along the scribed line, producing an edge that matches the wall's contour for a tight, gap-free fit. Scribing is the professional method for fitting any material tightly against an irregular surface.

87. D — The reveal creates a visual shadow line that defines the transition from the jamb to the casing. This shadow line conceals minor alignment imperfections between the jamb edge and the casing — without the reveal, any misalignment is immediately visible as a step or gap. A consistent 3 to 6 mm reveal produces a clean, professional appearance.

88. B — Solid wood panels expand and contract significantly with seasonal humidity changes. Floating panels accommodate this movement within the frame without stress. If the panels were glued or pinned, expansion forces would split the panels or push the frame joints apart, causing permanent structural damage to the wainscoting assembly.

89. A — The skirt board is installed first, and the treads and risers are scribed and cut to fit tightly against its face. This sequence produces the cleanest joint because the stair components are custom-fitted to the already-installed skirt. Installing the treads first and applying the skirt afterward requires complex scribing of the skirt to fit around each tread and riser.

90. A — Before removing horizontal blocking from a wall, the carpenter must determine whether it serves a structural function (supporting a load from above) or a fire-stopping function (blocking a

concealed cavity at a floor-to-wall or ceiling-to-wall transition). Removing fire stopping violates the fire code and creates a pathway for fire spread in the concealed wall cavity.

91. D — Vinyl floor tiles manufactured before 1986 — especially 9×9 inch and 12×12 inch tiles — and their dark-coloured mastic adhesives are among the most common asbestos-containing materials found in residential renovations. Both the tiles and the adhesive must be sampled and tested before any disturbance. If positive, licensed abatement is required.

92. B — A kitchen island with a granite countertop, sink, and gas cooktop requires multiple code-compliant installations: electrical outlets at the required spacing, properly vented plumbing with drainage, a gas connection by a licensed gas fitter, and adequate structural support for the heavy granite. A building permit is typically required for the plumbing and gas work.

93. A — Electrical circuits are de-energized and locked out first because they pose the most immediate life-safety risk — accidental contact with a live wire during demolition can be fatal. After the electrical hazard is eliminated, the water supply is shut off and drained. Finally, the HVAC duct is disconnected. Each service is safely terminated before the framing is removed.

94. C — The carpenter must identify all obstructions within the wall cavities before blowing insulation. Horizontal fire blocking, diagonal let-in bracing, plumbing pipes, electrical wiring, and junction boxes can all block or deflect the insulation fill tube, creating voids that reduce insulation effectiveness. An infrared scan after installation verifies complete, uniform fill.

95. A — A filled bathtub weighs approximately 300 to 500 kg — a significant concentrated load that may exceed the capacity of the existing floor joists. The carpenter must verify that the joists beneath the bathtub and the tiled floor assembly can support these concentrated loads. Reinforcement (sistering, adding a beam, or adding additional joists) may be required.

96. B — The exposed sheathing provides the opportunity to install the weather-resistive barrier that was missing from the original construction. The housewrap must be integrated with all window, door, and penetration flashings for a continuous water and air management layer. This corrects the original construction deficiency and protects the wall for the life of the new siding.

97. A — The structural engineer must evaluate whether the existing 2×4 studs can carry the additional loads from the second storey and roof. The allowable compressive load on a 2×4 stud depends on the

stud height, species, grade, and the magnitude of the accumulated loads. If the studs are overstressed, they must be reinforced with sister studs or replaced.

98. C — Concrete masonry anchors (Tapcon screws, sleeve anchors, or similar) are driven through the drywall into the CMU blocks at each cabinet mounting point. These anchors provide the pull-out resistance needed to support the weight of the cabinets, countertop, dishes, and food. Toggle bolts behind drywall on CMU have no cavity to expand into and are ineffective.

99. B — A cross-section template of the undamaged original profile is taken and provided to a millwork shop. The shop uses the template to create custom knife profiles for their moulder that replicate the original contours exactly. The matching pieces are installed to blend seamlessly with the existing cornice, preserving the heritage character.

100. D — Major renovations should be disclosed during any future property sale. Structural modifications, additions, and changes to mechanical systems are material facts that affect the property's value, safety, and insurability. Supporting documentation — permits, inspection reports, engineering drawings, and as-built records — provides proof that the work was done properly and legally.