PRACTICE EXAM 15: RED SEAL CARPENTER INTERPROVINCIAL SIMULATION (100 QUESTIONS)

1. A carpenter is demolishing an interior partition wall and encounters old wiring that uses a fabric-covered insulation over rubber-coated conductors. The fabric is brittle and the rubber beneath is cracked, exposing bare copper in several spots. What is the immediate hazard, and what must the carpenter do before continuing?

A. The old rubber insulation emits a toxic odour when disturbed that requires respiratory protection only

B. The brittle fabric creates a fire hazard from friction when the wire is moved through the wall framing

C. The exposed wiring only becomes hazardous if the circuit is carrying more than 15 amps of current load

D. The exposed bare copper can contact metal framing, junction boxes, or the carpenter's tools, creating a shock or arc-flash hazard — the circuit must be de-energized and locked out before any further work

2. A carpenter is using a pneumatic stapler to install housewrap on exterior sheathing. The stapler drives cap staples (staples with a plastic cap washer). During operation, the carpenter notices that some staples are not seating flush — the cap stands 3 mm above the housewrap surface. What adjustment corrects this?

A. Switch to a longer staple that penetrates deeper into the sheathing for better pull-through resistance

B. Increase the air pressure at the regulator slightly until the staples seat flush without tearing through the housewrap material

C. Switch to a narrower-crown staple that concentrates the driving force on a smaller cap area on the wrap

D. Reduce the air pressure because the staples are bouncing off the hard sheathing surface beneath the wrap

3. A carpenter is cutting engineered stone countertop material (quartz) with a circular saw fitted with a diamond blade. The cutting process produces a large volume of fine dust. In addition to crystalline silica, what other hazard does the dust from engineered quartz create?

A. The dust is combustible and can ignite if it accumulates near an ignition source on the work surface

B. The dust is radioactive because the natural quartz mineral contains trace amounts of radon gas

C. The dust contains resin binders used in manufacturing that can cause skin sensitization and respiratory irritation in addition to the silica hazard — full PPE including P100 respirator, eye protection, and gloves is required

D. The dust generates an electrostatic charge that attracts airborne particles and creates a visibility hazard

4. A carpenter is working on a commercial construction site where multiple cranes are operating simultaneously. The carpenter's work area is between two crane swing zones. What specific protocol protects workers in areas between crane operations?

A. Designated crane operating zones must be clearly marked with barricades and signage, signal persons must coordinate all crane movements, and workers must be excluded from the overlap zones where crane swing paths intersect

B. Workers between cranes must wear two hard hats stacked for double impact protection from falling loads

C. The cranes must operate in alternating shifts so only one crane is active at any time during the workday

D. The carpenter must carry a radio tuned to the crane operator's frequency to hear advance warning of lifts

5. A carpenter is using a table saw to rip treated plywood for deck joist headers. The treated plywood produces both wood dust and copper-based preservative particles. Partway through the cut, the saw blade binds and the wood begins to smoke. What is the immediate concern beyond the normal kickback hazard?

A. The smoke indicates that the blade arbour bearing has seized and the motor will overheat within seconds

B. The treated plywood smoke contains only water vapour from the moisture in the treatment chemicals

C. The binding blade will permanently warp from the heat and must be replaced after a single binding event

D. The smoke from burning treated wood releases copper compounds and other chemicals that are toxic when inhaled — the carpenter must stop the cut immediately, allow the smoke to clear, and ensure adequate ventilation before resuming

6. A scaffold has been erected on the exterior of a multi-storey building. A debris net is installed at the second level, catching falling objects before they reach ground level. A carpenter working on the fourth level drops a tape measure. What does the debris net protect against?

A. The net prevents the tape measure from hitting the building facade and damaging the exterior cladding

B. The net catches falling objects before they reach workers or pedestrians at lower levels or at ground level, preventing struck-by injuries from dropped tools and materials

C. The net is a decorative feature required by the project architect for the building's appearance during work

D. The net collects all dropped items so workers can retrieve them at the end of the day without ground search

7. A carpenter is setting up a compound mitre saw on a job site workstation. The saw must be securely mounted to the workstation surface. The carpenter bolts the saw through its base mounting holes. Why is bolting the saw to the workstation critical for safe operation?

A. Bolting prevents theft of the saw when the job site is unoccupied during overnight and weekend periods

B. Bolting prevents the saw from vibrating across the workstation surface and eventually falling off the edge

C. An unbolted mitre saw can shift or tip during a cut — especially when cutting long, heavy stock — causing the blade to bind, the workpiece to shift unpredictably, or the saw to fall off the workstation

D. Bolting is only required for saws larger than 305 mm (12 inches) because smaller saws are self-stable

8. A construction crew is pouring concrete from a boom pump truck. The pump boom extends over the pour area. A carpenter walks beneath the extended boom to reach the work area. Why is walking beneath the pump boom dangerous?

A. The pump boom can fail hydraulically and collapse downward without warning — the heavy steel boom falling from height would crush anyone beneath it; workers must stay outside the boom swing and collapse radius

B. The pump hose attached to the boom drips concrete paste that contains caustic chemicals harmful to skin

C. The boom generates a strong electromagnetic field from the hydraulic pump that interferes with pacemakers

D. The boom tip oscillates during pumping and can swing sideways, striking workers standing beneath it

9. A carpenter is cutting a large opening in a concrete block wall using a gas-powered cut-off saw (concrete saw). The saw produces exhaust fumes, concrete dust, and extreme noise. What minimum PPE combination is required for this operation?

A. Hard hat and safety glasses only because the outdoor location provides adequate ventilation for fumes

B. N95 respirator and earplugs only because the dust and noise are the only significant hazards present

C. Safety glasses and gloves only because the concrete dust settles quickly and noise exposure is brief

D. P100 respirator for silica dust, hearing protection (earplugs or earmuffs) for noise exceeding 100 dB, safety glasses or face shield for flying debris, and gloves for vibration — this operation generates multiple simultaneous hazards

10. A carpenter discovers that a coworker has connected two extension cords together end-to-end to reach a distant work area. The combined cord length is 60 metres. A 15-amp circular saw is connected to the end. Why is this daisy-chained extension cord setup a serious hazard?

A. The connection point between the two cords can separate under tension and the exposed pins become live

B. The combined 60-metre cord length creates excessive voltage drop that starves the saw motor, causing it to draw more current, overheat, and potentially burn out or start a fire — and the long cord increases the risk of tripping and damage

C. The two-cord connection generates radio frequency interference that disrupts communications on site

D. The combined cord weight exceeds the rating of the outlet receptacle and can pull the plug from the wall

11. When working with a pneumatic framing nailer, the carpenter must keep the tool pointed away from all body parts and other workers at all times, even when the tool is not being actively fired. Why is this directional awareness critical even when the trigger is not being pulled?

A. The exhaust air from the nailer can blow debris into the eyes of nearby workers if the tool is misdirected

B. The nailer magazine spring can launch loose nails from the open end of the magazine if jarred or dropped

C. The contact trip (bump fire) mechanism can discharge a nail if the nose contacts any surface while the trigger is held — misdirecting the tool toward a body part or coworker can cause a penetrating nail injury

D. The nailer generates a magnetic field that attracts metallic debris toward the nose when the tool is charged

12. A carpenter is setting up a portable table saw and must verify that the blade guard, riving knife, and anti-kickback pawls are all installed and functioning. After verifying these safety devices, what additional check must the carpenter perform before making the first cut?

A. Verify that the blade is sharp, properly aligned with the mitre gauge slots, running true without wobble, and set to the correct height for the material being cut — a dull, misaligned, or improperly set blade increases the risk of binding, kickback, and poor cut quality

B. Verify that the table surface has been waxed within the last 24 hours to reduce friction on the workpiece

C. Verify that the dust collection bag is empty and properly attached for maximum sawdust capture capacity

D. Verify that the power cord is wrapped around the base of the saw for strain relief during operation

13. A carpenter encounters the abbreviation "A.F.F." on an interior elevation drawing next to a dimension for an electrical outlet height. The dimension reads "400 A.F.F." What does this abbreviation mean?

A. "Above Foundation Footing" — measured from the top of the concrete footing to the outlet centre point

B. "Approximately Forty-Four" — an approximate metric dimension that must be verified in the field

C. "At Finished Floor" — indicating the outlet is located at the level of the finished floor surface below

D. "Above Finished Floor" — the outlet centre is positioned 400 mm above the finished floor surface level

14. A carpenter is performing a material takeoff for roof trusses. The building is 18.0 metres long with trusses at 600 mm on centre. Including the gable end trusses at each end, how many trusses must be ordered?

A. 30 trusses based on dividing the building length by the spacing without adding for the starter truss

B. 31 trusses based on (18,000 ÷ 600) + 1 = 30 + 1 = 31 trusses, which includes both gable end trusses

C. 36 trusses based on adding a 15% waste allowance to the calculated count before placing the order

D. 15 trusses based on using 1,200 mm spacing instead of the specified 600 mm for the calculation

15. A carpenter is reading a plumbing drawing that shows a cleanout symbol at the base of a vertical waste stack. The cleanout provides maintenance access. Why must the carpenter know the cleanout location during the framing phase?

A. The cleanout requires a larger pipe diameter that affects the size of the hole drilled through the framing

B. The cleanout cover must remain accessible after the wall is finished — the carpenter must plan a removable access panel in the finished wall at the cleanout location so plumbers can reach it for future maintenance

C. The cleanout must be installed before the framing is completed because it cannot be inserted through holes drilled after the wall is standing in place

D. The cleanout location determines where the main shut-off valve is installed for the building water system

16. A carpenter is calculating the area of a hip roof to estimate sheathing material. The building footprint is 12.0 m × 8.0 m with a 5/12 pitch. The roof has four sloped planes — two large trapezoidal planes and two smaller triangular planes at the hip ends. Which dimension is used for area calculations — the horizontal (plan) dimension or the slope dimension?

A. The slope dimension must be used because roofing materials are installed on the sloped surface, and the actual area of each sloped plane is larger than its horizontal projection — the slope factor for a 5/12 pitch (approximately 1.083) is applied to the plan area

B. The horizontal plan dimension is used because the Building Code specifies all roof areas in plan view only

C. The average of the plan and slope dimensions is used to produce a compromise area for material ordering

D. Only the plan dimension is needed because sheathing panels are cut flat and bent to follow the slope

17. A carpenter is laying out the locations of post footings for a deck. The deck is 4.8 m × 6.0 m with posts at each corner and intermediate posts at 2.4 m on centre in both directions. How many post footings are needed?

A. 4 footings based on placing posts at the four corners only without any intermediate support posts

B. 8 footings based on placing posts at corners and midpoints of the long sides only without interior posts

C. 6 footings based on placing posts at corners and the midpoints of the short sides only for the layout

D. 9 footings based on a 3 × 3 grid of posts: three rows at 2.4 m spacing × three columns at 3.0 m spacing

18. When a carpenter reads "R.O." dimensions on a framing plan for a window, the dimensions indicate the rough opening size. A window specification lists the window unit size as 1,200 × 1,500 mm. The recommended rough opening is 1,225 × 1,525 mm. What does the 25 mm difference on each side represent?

A. The 25 mm is the thickness of the exterior brick mould that wraps around the window frame perimeter

B. The 25 mm total (approximately 12 mm on each side) provides shimming and levelling space between the window frame and the rough opening framing for adjustment during installation

C. The 25 mm is the depth of the window sill nosing that projects beyond the rough opening at the bottom

D. The 25 mm is the insulation thickness required between the window frame and the rough opening framing

19. A carpenter is performing a stairway layout and must verify the riser-tread relationship using the Building Code comfort formula. The calculated riser is 178 mm and the tread is 254 mm. Using the formula 2R + T (where R is riser height and T is tread depth), does this stairway meet the comfort standard?

A. 2(178) + 254 = 610 mm — this falls within the ideal range of 610 to 630 mm, confirming a comfortable climbing rhythm

B. 2(178) + 254 = 432 mm — this is below the minimum and the tread depth must be increased to compensate

C. 2(178) + 254 = 710 mm — this exceeds the maximum and the riser height must be reduced for compliance

D. The formula 2R + T does not apply to residential stairs and is used only for commercial stairway design

20. A carpenter must calculate the total linear metres of exterior wall plate material needed for a rectangular building measuring 15.0 m × 10.0 m. The walls are framed with three plates per wall (one bottom plate and a double top plate). What is the total plate material needed?

A. 50.0 metres based on the perimeter only without multiplying by the number of plates per wall section

B. 100.0 metres based on doubling the perimeter for two plates instead of the three required per wall section

C. 150.0 metres based on the perimeter of 50.0 metres multiplied by 3 plates per wall for the total plate stock

D. 200.0 metres based on quadrupling the perimeter for an incorrect plate count of four per wall section

21. A carpenter is using a builder's level on a windy day and notices the crosshairs vibrate slightly in the telescope, making precise rod readings difficult. What causes this vibration, and how should the carpenter compensate?

A. The vibration is caused by a defective compensator inside the instrument that requires factory service

B. Wind buffeting the instrument and tripod causes the crosshair image to vibrate — the carpenter should shield the instrument from wind, wait for calm moments to take readings, and verify each reading with a second observation

C. The vibration is caused by nearby traffic and the carpenter should relocate the instrument away from roads

D. The telescope lens has moisture condensation that distorts the image and must be wiped clean before use

22. A carpenter is converting between metric and imperial for a joist span calculation. The Building Code span table shows a maximum span of 3,680 mm for 38 × 184 mm SPF No. 2 joists at 400 mm on centre under standard residential loading. What is this span in feet and inches?

A. 10 feet 0 inches based on dividing 3,680 by 368 for a rough imperial conversion of the span value

B. 14 feet 6 inches based on dividing by 254 instead of 25.4 for the millimetre-to-inch conversion factor

C. 6 feet 0 inches based on dividing 3,680 by 600 for an incorrect conversion factor in the calculation

D. 12 feet 1 inch based on 3,680 ÷ 25.4 = 144.9 inches = 12 feet 0.9 inches, approximately 12 feet 1 inch

23. A carpenter is performing layout for a building on a sloped lot. The surveyor has established that the front of the building pad is at elevation 100.000 m and the rear is at elevation 99.200 m. The building is 12.0 metres deep (front to rear). What is the average slope of the building pad?

A. 6.67% based on dividing the elevation difference of 0.800 m by the depth of 12.0 m and multiplying by 100

B. 12.0% based on dividing the depth by the elevation difference and expressing as a percentage value

C. 0.8% based on using the elevation difference directly as the percentage without dividing by the distance

D. 8.0% based on multiplying the elevation difference by 10 instead of dividing by the depth for the slope

24. A carpenter is reading a window schedule and encounters the entry "1500 × 1200 C" where "C" designates the window type. On this project, "C" indicates a casement window. How does a casement window operate?

A. A casement window slides horizontally on a track, with one panel fixed and one panel sliding past it

B. A casement window tilts inward at the top on a horizontal pivot for ventilation in rain conditions

C. A casement window is hinged on one vertical side and swings outward (or inward) like a door, operated by a crank mechanism

D. A casement window has two sashes that slide vertically past each other for top or bottom ventilation

25. A carpenter is estimating the number of 38 × 89 mm (2 × 4) studs needed for interior non-bearing partition walls. The total linear metres of partition walls is 42 metres. Studs are at 400 mm on centre. What is the basic stud count before adding extras for corners and openings?

A. 42 studs based on using one stud per linear metre as a rough approximation for quick estimation

B. 106 studs based on (42,000 ÷ 400) + 1 = 105 + 1 = 106 studs for the full partition layout including starter

C. 210 studs based on doubling the count to account for both sides of each partition wall in the building

D. 70 studs based on using 600 mm spacing instead of the specified 400 mm for the partition stud layout

26. A carpenter needs to establish a slope of 2% over a distance of 15 metres for a concrete walkway. What is the total elevation change from the high end to the low end?

A. 300 mm based on 15 metres × 0.02 (2%) = 0.30 metres = 300 mm total elevation drop over the length

B. 30 mm based on dividing the percentage by the distance instead of multiplying for the elevation change

C. 750 mm based on multiplying 15 by 0.05 (5%) instead of the specified 2% slope for the walkway grade

D. 150 mm based on using 1% instead of the specified 2% and multiplying by the 15-metre walkway length

27. A carpenter is building formwork for a concrete wall that will have architectural reveals — horizontal grooves in the finished concrete surface for decorative effect. The reveals are 25 mm deep and 15 mm wide, running the full length of the wall at specific heights. How are these reveals formed?

A. The grooves are cut into the cured concrete surface with a concrete saw after the forms are stripped

B. The grooves are created by pressing a heated tool into the fresh concrete before it sets in the form wall

C. The grooves are formed by gluing small pieces of trim to the outside of the form panel that press inward

D. Wood or rubber strips (reveal strips) are attached to the inside face of the form panel at the specified heights — the concrete fills around the strips, and when the forms are stripped, the strips are removed, leaving the grooves

28. A concrete specification calls for "low-heat cement" in a massive concrete pour (a large foundation mat). Why is low-heat cement specified for massive pours?

A. Low-heat cement produces concrete that is more resistant to chemical attack from soil contamination

B. Low-heat cement generates less heat during hydration, reducing the temperature differential between the interior and exterior of the massive pour that causes thermal cracking

C. Low-heat cement sets faster than standard cement, allowing the forms to be stripped sooner on the project

D. Low-heat cement produces concrete with higher ultimate compressive strength than standard cement mix

29. A carpenter is building forms for a post-tensioned concrete beam. The beam has post-tensioning ducts running through it that will contain steel tendons after the concrete is placed. The ducts must be positioned precisely within the beam form. What holds the ducts at the correct profile (curved path) within the form during the pour?

A. The ducts float naturally to the correct position because they are lighter than the surrounding concrete

B. The ducts are glued to the form soffit and the glue bond holds them at the specified depth during the pour

C. Support chairs and tie wires attached to the reinforcement cage hold the ducts at the specified profile — the duct path curves upward at mid-span and downward at the supports to follow the bending moment diagram

D. The ducts are rigid steel tubes that maintain their own shape without any support within the beam form

30. When a concrete slab specification calls for a "dry shake hardener" finish, what is a dry shake hardener and when is it applied?

A. A liquid coating applied to the cured concrete surface after 28 days to harden the surface for traffic

B. A cement-based powder broadcast onto the wet concrete surface during the bull floating stage that is worked into the surface to create a wear-resistant, hard-wearing finish layer

C. A chemical spray applied to the concrete surface immediately after form stripping to seal the pores

D. A metallic aggregate pressed into the concrete surface after final trowelling for a decorative appearance

31. A carpenter is constructing formwork for a concrete wall that has a sloped top — the wall is taller at one end than the other, following the slope of a ramp above. The form must produce a sloped top surface on the wall. How is this sloped top surface formed?

A. The concrete is poured to a level top and the slope is cut into the hardened concrete with a saw afterward

B. The form panels are cut to different heights at each end but left open at the top for the concrete to self-level

C. A piece of lumber is suspended across the top of the open form at the high points to screed the top level

D. A top form (lid panel) is installed at the correct slope angle across the top of the wall form, enclosing the top so the concrete fills to the underside of the sloped panel and produces the angled top surface

32. A carpenter discovers that the ready-mix concrete being placed in a footing has visible chunks of ice in the mix. The delivery ticket shows the concrete was batched at 12°C, but the truck has been waiting in freezing conditions for over an hour. What should the carpenter do?

A. Accept the concrete because the ice will melt and become part of the mix water as the concrete cures

B. Reject the concrete — ice in the mix means the concrete temperature has dropped below 0°C, the water has frozen, and the hydration process may be compromised; the concrete cannot achieve its specified strength

C. Add hot water to the truck mixer to melt the ice before placement and restore the concrete temperature

D. Place the concrete quickly before more ice forms and cover it immediately with insulating blankets

33. A concrete floor slab has been placed and finished. The specification calls for the slab to be moist-cured for 7 days using wet burlap covered with polyethylene. After 3 days, the carpenter removes the burlap to check the surface and then replaces it. Does this interruption affect the curing?

A. The brief interruption has no effect because 3 days of curing has already achieved maximum strength

B. The brief interruption causes permanent surface damage because the surface dries instantly when exposed

C. The brief interruption slows the hydration process during the exposed period, and repeated or prolonged interruptions reduce the ultimate surface strength and durability — the burlap must be kept continuously wet for the full 7-day curing period

D. The interruption is beneficial because it allows excess moisture to evaporate from the surface temporarily

34. A carpenter is placing concrete for a residential garage slab that includes a floor drain at the centre. The slab must slope toward the drain from all four edges. What is the typical slope for a residential garage floor draining to a centre floor drain?

A. A minimum slope of 2% (20 mm per metre) from the perimeter edges toward the centre drain, which provides adequate drainage while maintaining a comfortable walking and driving surface

B. A flat slab with no slope because the floor drain has a built-in pump that removes standing water

C. A minimum slope of 10% from the perimeter to the drain for rapid drainage of automotive fluids and water

D. The slope is only required on the half of the slab nearest the garage door where water enters the space

35. A carpenter is vibrating concrete in a wall form and notices that the vibrator seems less effective — the concrete is not responding to the vibration as quickly as previous lifts. The vibrator is running but the amplitude (vibration intensity) appears reduced. What is the most likely cause?

A. The concrete in this lift has a lower slump than the previous lifts and requires longer vibration at each point

B. The vibrator head is worn and the eccentric weight inside has been reduced by abrasion during extended use

C. The form ties at this height are spaced closer together and are dampening the vibration in the concrete mass

D. The vibrator motor is overheating from extended use and is delivering reduced power to the head — the carpenter should allow the motor to cool and check the vibrator's condition before continuing

36. When a carpenter builds formwork for a concrete retaining wall, the forms must include provisions for the drainage system behind the wall. What component is commonly embedded in the form before the pour?

A. A layer of landscape fabric draped over the rebar cage to filter groundwater before it enters the wall mass

B. Short lengths of pipe or formed channels through the wall near the base (weep holes) that allow groundwater to drain through the wall to the collection system on the exposed side

C. A row of anchor bolts along the top of the wall that will later support the drainage pipe brackets

D. A waterproof membrane attached to the inside face of the form that remains on the wall after stripping

37. A carpenter is finishing a concrete sidewalk and must create a consistent texture across the entire surface. The carpenter uses a broom finish. After brooming the first section, the carpenter notices that the texture depth varies — some strokes produce deep grooves while others produce shallow marks. What causes this inconsistency?

A. The concrete is too cold and the surface has hardened unevenly along the length of the sidewalk pour

B. The broom bristles are worn unevenly and the broom must be replaced with a new one for uniformity

C. The concrete has not stiffened uniformly along the pour — sections that have stiffened more resist the broom and produce shallower marks, while softer sections produce deeper grooves; timing the broom finish to the concrete's consistent stiffness produces uniform texture

D. The carpenter is applying inconsistent downward pressure on the broom handle from one stroke to the next

38. A carpenter is placing concrete for a suspended slab and the pump operator stops the pour to relocate the boom. During the 20-minute pause, the carpenter notices the most recently placed concrete is beginning to stiffen at the surface. When pumping resumes, what must the carpenter do at the junction between the stiffened concrete and the fresh concrete?

A. Vibrate the fresh concrete thoroughly into the stiffened surface, ensuring the vibrator penetrates at least 150 mm into the previously placed concrete to knit the two layers together and prevent a cold joint

B. Spray water on the stiffened surface to re-wet it before placing the fresh concrete on top of the junction

C. Apply a bonding agent to the stiffened surface before the fresh concrete is placed over the junction area

D. Place the fresh concrete on top of the stiffened surface without any special treatment at the junction point

39. A concrete specification calls for the slab to receive a "burnished" finish — an extremely hard, dense, smooth surface produced by repeated steel trowelling under heavy pressure. During the final trowel passes, the carpenter notices dark streaks on the surface. What causes these dark streaks?

A. The dark streaks are caused by iron oxide from the trowel blade reacting with the wet cement paste

B. The dark streaks are caused by excessive form release agent on the edge forms migrating onto the surface

C. The dark streaks indicate that the concrete is being over-trowelled and the surface is delaminating below

D. The dark streaks (called "trowel burns") are caused by the high friction between the steel trowel and the dense surface paste during aggressive finishing — they are typically cosmetic but indicate the surface is being compacted effectively

40. A carpenter is building forms for a concrete wall and must install chamfer strips at all outside corners of the wall form. Chamfer strips are triangular in cross-section (typically 19 mm × 19 mm). What is the purpose of chamfering the concrete corners?

A. Chamfer strips are used to test the concrete cover over the rebar at each corner for quality control purposes

B. Chamfered corners replace the sharp 90-degree edge with a bevelled edge that resists chipping and spalling — sharp concrete corners are fragile and break easily from impact, form stripping, and freeze-thaw cycling

C. Chamfer strips create a decorative shadow line at each corner for architectural appeal on exposed walls

D. Chamfer strips prevent the form panels from locking together at outside corners during assembly

41. When pouring a concrete wall, the carpenter monitors the concrete level in the form to ensure each lift is placed at the correct thickness. If a lift is too thick, what problem can occur?

A. An excessively thick lift may not be fully consolidated by the vibrator because the vibrator cannot reach the bottom of the thick lift — trapped air at the bottom produces honeycombing at the lower portion of the lift

B. The thick lift produces a darker colour at the bottom because the concrete cures under greater pressure

C. The thick lift generates more heat of hydration and causes the form panels to expand outward at that level

D. The thick lift settles faster than thinner lifts and produces a visible settlement crack at the lift boundary

42. A carpenter is constructing forms for a concrete retaining wall that will be backfilled on one side. The structural drawings show horizontal reinforcement on the earth-retention side at closer spacing than the exposed face. Why is the reinforcement heavier on the earth-retention side?

A. The heavier reinforcement on the earth side protects the rebar from corrosion caused by soil contact

B. The heavier reinforcement provides additional insulation against frost penetration from the earth side

C. The earth-retention side is the tension face when the wall resists lateral earth pressure — the horizontal rebar resists the tensile stresses produced by the earth pushing against the wall, requiring closer spacing where the tension is greatest

D. The heavier reinforcement on the earth side adds weight that helps the wall resist overturning from the load

43. A carpenter is installing solid lumber floor joists and must determine which face of each joist faces up. All dimensional lumber has a natural bow (crown) from the sawmill. When the carpenter sights down the edge of each joist, the crown is visible as a slight upward curve. Why must all joists be installed with the crown facing up?

A. Crown-up installation places the thicker wood fibres on the compression side for maximum strength

B. Crown-up installation allows the downward deflection under load to straighten the joist toward a level position, producing a flat floor — crown-down installation creates a built-in sag that worsens under load

C. Crown-up installation prevents the joist from twisting because the crown acts as a natural bracing force

D. Crown-up installation provides better nail-holding for the subfloor because the wood fibres are denser

44. When framing an exterior wall, the carpenter must ensure that the bottom plate is properly fastened to the subfloor and rim joist below. For a standard bearing wall on a wood-frame floor system, what is the typical nailing pattern for the bottom plate to the subfloor?

A. A single row of nails at 600 mm on centre along the centre of the plate for minimal subfloor connection

B. Toenails from each stud into the subfloor replace the need for direct plate-to-subfloor nailing entirely

C. No nails are needed because the weight of the wall and the friction between the plate and subfloor hold it

D. Two rows of 82 mm nails staggered at approximately 400 mm on centre driven through the bottom plate into the subfloor and rim joist below for a secure structural connection

45. A carpenter is framing a wall with a long run of windows. Three windows are positioned side by side with only a single stud space (one king stud shared between adjacent windows) between each pair. This creates a large expanse of glass with narrow wall sections between. What structural consideration is critical for this configuration?

A. The narrow wall section between windows carries concentrated loads from the header above — the single king stud between windows must be adequate to carry the combined loads from both adjacent headers without crushing

B. The narrow wall section must contain fire blocking between each window to prevent horizontal fire spread

C. The narrow wall section must be insulated with spray foam rather than batt insulation for thermal efficiency

D. The narrow wall section requires a double layer of sheathing for adequate racking resistance between windows

46. A carpenter is framing a floor opening for a skylight shaft that extends from the roof through the attic to the ceiling below. The shaft walls are framed with studs running from the ceiling frame to the roof frame. The shaft must flare outward from a smaller roof opening to a larger ceiling opening. Why is the shaft flared?

A. The flare reduces the structural load on the roof rafters at the skylight opening by spreading the forces

B. The flare prevents ice dam formation at the skylight by increasing the air circulation within the shaft

C. The flared shaft allows more natural light to reach the room below by widening the light cone from the smaller skylight opening to a larger ceiling opening, maximizing the daylight benefit

D. The flare provides space for the condensation that forms inside the shaft to drain back to the roof opening

47. A carpenter has framed all the walls on a building and is checking the work before sheathing. Using a plumb bob, the carpenter checks each wall corner for plumb. The north-east corner shows a 6 mm lean outward at the top. What is the most effective method to correct this lean?

A. Remove the sheathing from the adjacent wall and push the corner inward by hand from the outside face

B. Adjust the temporary diagonal brace at the northeast corner, shortening or lengthening it as needed to push the top of the wall inward until the plumb bob shows the corner is perfectly vertical

C. Add a second layer of sheathing on the inside face of the wall at the corner to build out the lower portion

D. Install the exterior sheathing tightly at the corner to force the lean back to plumb through panel rigidity

48. When framing a gable roof, the carpenter must install a fly rafter (barge rafter) at each gable end to form the rake overhang. The fly rafter hangs in space beyond the gable end wall. What supports the fly rafter along its length?

A. The fly rafter is supported only at its top end (at the ridge) and bottom end (at the fascia board connection)

B. Roof sheathing nailed to the fly rafter and the adjacent common rafter transfers loads through the panel

C. The gable end truss top chord extends outward to support the fly rafter at its midpoint along the slope

D. Lookout rafters (horizontal blocks extending outward from the first inboard common rafter past the gable wall) support the fly rafter at regular intervals along its length

49. A carpenter is framing a partition wall and must install a cripple stud between the bottom plate and the rough sill of a window opening. The cripple stud is shorter than a regular stud. What is the primary purpose of cripple studs below a window sill in a non-bearing wall?

A. Cripple studs maintain the regular on-centre stud spacing for sheathing and drywall nailing and support the rough sill at the specified height above the floor

B. Cripple studs carry the window weight from the rough sill to the bottom plate for structural load transfer

C. Cripple studs provide fire blocking in the space between the bottom plate and the window rough sill

D. Cripple studs brace the bottom plate against lateral displacement caused by the door swing at the opening

50. A carpenter is installing the double top plate on a wall and reaches a point where an interior partition wall intersects the exterior wall. The double top plate of the exterior wall must lap over the top plate of the partition wall at this intersection. Why is this lap connection important?

A. The lap provides a nailing surface for the ceiling drywall at the wall-to-partition junction above the plates

B. The lap reduces sound transmission between the rooms on each side of the partition at the junction

C. The lap ties the partition wall to the exterior wall, creating a structural connection that prevents the two walls from separating under lateral loads — this lapped joint transfers horizontal forces between the walls

D. The lap provides additional material for attaching the roof truss hold-down straps at the wall intersection

51. A carpenter is constructing a deck and must install the guard (guardrail) system. The guard must be a minimum height above the deck surface. What is the minimum guard height required by the Building Code for a residential deck?

A. 760 mm (30 inches) matching the minimum height of a windowsill in a residential building for consistency

B. 900 mm (approximately 36 inches) — the minimum residential guard height specified by most Canadian Building Codes, measured from the deck surface to the top of the guard rail

C. 1,070 mm (42 inches) matching the commercial building guard height standard for all deck installations

D. 1,200 mm (48 inches) providing extra height to prevent children from climbing over the guard at the edge

52. When installing floor sheathing (subfloor panels), the carpenter must ensure that the panels are installed with the correct side facing up. Most OSB subfloor panels have a smooth side and a rough side. Which side faces up?

A. The rough side faces up because it provides better traction for workers walking on the subfloor during work

B. Either side can face up because OSB subfloor panels are identical on both surfaces without any difference

C. The smooth side faces up because it provides a flatter surface for the finished flooring above the subfloor

D. The smooth side faces up because the stamp and grade mark printed on the smooth side must be visible for the building inspector to verify the panel rating during the framing inspection

53. A carpenter is framing a cathedral ceiling with exposed rafters and no collar ties or ceiling joists. A structural ridge beam (glulam) is specified. The beam is 130 mm × 608 mm and spans 10.0 metres between posts. The engineer's drawing shows the beam is supported by two 191 × 191 mm (8 × 8) posts at each end. Why are the posts at each end critical for this system?

A. Without ceiling joists to resist outward thrust, the entire roof load is carried by the ridge beam — the end posts transfer the full beam reaction (half the total roof load) down to the foundation, creating the only vertical load path for the roof

B. The posts provide lateral bracing for the ridge beam against wind forces acting on the roof from the side

C. The posts support the gable end wall framing in addition to the ridge beam for the combined loading

D. The posts are only required during construction and can be removed after the roof sheathing is installed

54. A carpenter is installing sheathing on a wall and the building inspector notices that the carpenter is using 51 mm (2-inch) nails instead of the specified 63 mm (2-1/2-inch) nails. The inspector issues a stop-work order. Why does this 12 mm difference matter so much?

A. The shorter nails miss the studs entirely because they do not penetrate through the sheathing thickness

B. The shorter nails are a different gauge diameter that provides less shear resistance per nail in the wall

C. The shorter nails provide 12 mm less penetration into the framing, reducing each nail's shear capacity — the cumulative effect across thousands of nails in the building's shear walls can reduce the total lateral resistance below the design requirement for wind and seismic forces

D. The shorter nails cost less than the specified nails and the inspector suspects the contractor is cutting costs

55. A carpenter is framing a wall section that will receive a heavy wall-mounted television and a floating shelf system. The total weight of the television, shelf, and stored items will be approximately 75 kg concentrated at the mounting bracket locations. What must the carpenter install to support this load?

A. A single piece of 38 × 89 mm lumber between two studs at the approximate mounting height for nailing

B. Solid blocking between studs — at least 38 × 140 mm (2 × 6) or wider — at each mounting bracket height, spanning between the studs and nailed securely so the mounting screws penetrate solid wood capable of carrying the concentrated load

C. A sheet of 12 mm plywood behind the drywall in the mounting area to spread the load across the studs

D. Additional drywall compound built up at the mounting location to create a harder surface for screw holding

56. A carpenter is building a hip roof and has cut the common rafters, hip rafters, and all the jack rafters. The last component to install is the ridge board. On a hip roof, the ridge board is shorter than the building length because the hip rafters at each end replace the ridge at the building corners. What determines the exact ridge board length on a hip roof?

A. The ridge board length equals the building length minus one common rafter run at each end (total = building length minus the building width, or more precisely minus twice the common rafter run)

B. The ridge board length equals exactly half the building length regardless of the building width dimension

C. The ridge board length equals the building width because the ridge runs in the short direction of the building

D. The ridge board length equals the building length minus the hip rafter length on each side of the building

57. A carpenter is framing a floor system and must install a flush beam to carry the floor joists. The beam is a triple-ply 38 × 286 mm LVL. The three plies must be fastened together on site. What nailing pattern is used to laminate the three plies into a single beam?

A. Two rows of 82 mm nails staggered at 300 mm on centre from both sides of the beam — the nails from each side penetrate through two plies and into the third, creating a composite unit that resists the bending loads as a single member

B. A single row of nails along the top edge only, driven through all three plies at 600 mm on centre spacing

C. Nails at 150 mm on centre from one side only, penetrating through all three plies and clinching on the far side

D. Construction adhesive between the plies only, with no mechanical fasteners needed for the lamination

58. When framing a wall, the carpenter encounters a location where an HVAC duct passes horizontally through the wall. The duct is 300 mm wide × 100 mm deep. The wall is framed with 38 × 140 mm (2 × 6) studs. The carpenter must create an opening in the wall for the duct. How is this opening framed?

A. Each stud in the duct path is notched 100 mm deep on the front face to create a horizontal channel

B. The studs at the duct location are removed and replaced with shorter cripple studs above and below the duct

C. A horizontal opening is framed using a header above and a sill below the duct, with cripple studs maintaining the stud module above and below the opening — the header transfers loads around the duct opening to the adjacent full-height studs

D. The duct is rerouted above the ceiling because horizontal ducts cannot pass through stud walls by code

59. A carpenter discovers during floor framing that one I-joist has been delivered with a web that is delaminated — the OSB web is separating from the LVL flange at one end. The delamination extends approximately 200 mm along the joist. Should the carpenter install this joist?

A. Yes, if the delaminated end is positioned at mid-span where bending stress is highest for compensation

B. No — web delamination is a manufacturing defect that compromises the joist's structural capacity at the affected area; the joist must be rejected and replaced with a sound unit from the supplier

C. Yes, if the carpenter applies construction adhesive to the delaminated area and clamps it until it re-bonds

D. Yes, if the delaminated end is positioned at the bearing point where the web stiffener will reinforce it

60. A carpenter is installing roof trusses on a building that has a complex roof with multiple ridges and valleys. Some trusses in the valley area progressively decrease in height. These are "valley set" trusses. How do valley set trusses differ from standard trusses?

A. Valley set trusses have a flat top chord instead of a peaked top chord like standard gable-end trusses

B. Valley set trusses are identical to standard trusses but are installed at wider spacing for cost savings

C. Valley set trusses span in the perpendicular direction from the main trusses for the intersecting roof wing

D. Valley set trusses progressively decrease in height from the main roof plane downward, following the valley slope — they bear on the top chord of a girder truss rather than on the wall plate below

61. A carpenter is installing a pre-hung exterior door in a wall with exterior rigid foam insulation. The foam creates a 50 mm gap between the structural sheathing plane and the outer cladding plane. The door must be positioned to align with the cladding. What component bridges this 50 mm gap at the door opening?

A. The door is recessed 50 mm behind the cladding plane so it sits flush with the structural sheathing

B. A compressible foam gasket fills the 50 mm gap between the door frame and the structural sheathing

C. A plywood extension jamb or built-out buck bridges the 50 mm gap, providing a solid frame from the structural sheathing to the cladding plane that the door frame attaches to

D. The rigid foam is removed at the door location so the door frame sits directly against the sheathing surface

62. When installing asphalt shingles, the starter course is installed at the eave before the first visible course of shingles. The starter strip is installed with the adhesive strip positioned at a specific location. Where must the adhesive strip be positioned on the starter course?

A. Along the top edge of the starter strip so the adhesive bonds to the underlayment surface for wind hold-down

B. Along the bottom edge (near the eave) of the starter strip so it bonds to the drip edge below for permanence

C. At the centre of the starter strip for balanced adhesion between the drip edge below and shingles above

D. Along the bottom edge (near the eave) — wait: the adhesive strip on the starter must face upward near the eave edge so it bonds to the underside of the first visible shingle course above it, sealing the cutout slots against wind uplift

63. A carpenter is installing a continuous gutter system on a 20-metre eave. The gutter must slope toward two downspouts — one at each end. The high point is at the centre (10-metre mark) and the gutter slopes down toward each end. What is the typical slope for a residential gutter?

A. 25 mm per metre of gutter length for rapid drainage even during the heaviest rainfall conditions

B. No slope is needed because the volume of rainwater forces the water toward the downspouts by pressure

C. 10 mm per metre of gutter length for visible slope that makes the drainage direction obvious from below

D. Approximately 5 to 6 mm per 3 metres of gutter run (approximately 1/16 inch per foot) — barely perceptible visually but adequate to move water toward the downspouts

64. A carpenter is installing wood bevel siding and reaches a location where the wall steps back 25 mm at a beam pocket or structural transition. The siding must transition across this step without allowing water behind the upper course. What detail prevents water penetration at this step?

A. A bead of caulking applied along the step to seal the siding to the wall surface at the transition point

B. A Z-flashing installed at the step — the upper leg goes behind the upper siding and the lower leg extends over the face of the lower siding, directing water outward at the step transition

C. The siding courses continue across the step with no special treatment because the overlap provides protection

D. The siding is doubled (two layers) at the step location to create a thicker water barrier at the transition

65. A carpenter is installing a window in a wall and must create a sloped sill pan at the bottom of the rough opening. The sill pan directs water outward if it penetrates past the window frame. What slope does the sill pan require?

A. The sill pan must slope inward (toward the building) to direct water toward the interior drain system

B. No slope is required because the sill pan is flat and relies on the window weep holes for drainage only

C. The sill pan must slope outward (toward the exterior) so any water that reaches the sill drains to the outside rather than pooling on the sill or draining inward into the wall cavity

D. The sill pan must slope toward each end to drain water through the side flashings on each side of the window

66. When installing vinyl siding, the carpenter reaches a location where a gas meter pipe penetrates the wall. The vinyl siding cannot be cut tightly around the pipe because thermal expansion would cause the siding to press against the pipe and buckle. How should the carpenter detail the siding at this penetration?

A. A manufactured split vinyl mounting block or a J-channel frame is installed around the pipe penetration, providing an expansion-tolerant channel that the siding terminates into — the block allows siding movement without contact with the rigid pipe

B. The siding is cut 25 mm oversized around the pipe and the gap is filled with expanding spray foam insulation

C. The gas meter is relocated to a location between siding courses so no cutting around the pipe is needed

D. The siding is cut tightly around the pipe and caulked to create a watertight seal at the pipe penetration

67. A carpenter is installing exterior soffit panels and must decide the orientation of the soffit panels — should they run parallel to the wall or perpendicular to the wall (running from the wall to the fascia)? What determines the panel orientation?

A. Soffit panels always run parallel to the wall regardless of the overhang width for standard installations

B. The soffit material manufacturer specifies only one orientation for each product and this must be followed

C. Soffit panels always run perpendicular to the wall (from wall to fascia) in all residential soffit installations

D. The panel orientation depends on the overhang width — for narrow overhangs (under 300 mm), panels may run parallel to the wall; for standard overhangs (300 to 600 mm), panels typically run perpendicular (from wall to fascia) and are supported by two receiving channels

68. A carpenter is installing cedar shingle siding and must stagger the joints between courses. The minimum offset between joints in adjacent courses is 38 mm. Additionally, the joints in one course must not align with joints two courses below. What is the minimum offset between joints that are two courses apart?

A. The joints two courses apart must also be offset by at least 38 mm from each other, but standard practice

B. Joints two courses apart must be offset by at least 19 mm (half the adjacent-course offset) for adequate water coverage protection through the three-layer coverage of the shingle siding installation

C. Joints two courses apart have no offset requirement because the intermediate course provides full coverage

D. Joints two courses apart must never align — an offset of at least 19 mm is recommended so no vertical water path exists through three successive courses

69. When installing flashing at the base of a wall-to-roof intersection, the carpenter installs a continuous piece of base flashing along the bottom of the wall where it meets the roof surface. This base flashing extends up the wall and onto the roof. What is this base flashing called?

A. A cricket flashing that diverts water around a chimney or projection at the roof-wall junction

B. A valley flashing that runs along the intersection of two opposing roof slopes at the junction

C. An apron flashing (or base flashing) that runs horizontally along the wall-to-roof intersection, extending up behind the wall cladding and down onto the roof surface beneath the shingles

D. A counter flashing that is embedded in the wall mortar joints and laps over the step flashing below

70. A carpenter is installing exterior trim and must cope with seasonal wood movement. Wood trim expands in humid conditions and contracts in dry conditions. What joint detail accommodates this movement at the junction of two long pieces of trim on a straight wall run?

A. A scarf joint (two opposing 45-degree cuts overlapped) that allows the pieces to slide past each other as they expand and contract, maintaining a visually tight joint through seasonal movement cycles

B. A butt joint with a 6 mm gap that is filled with caulking to accommodate expansion without buckling

C. A finger joint that interlocks the two pieces and prevents any seasonal movement at the junction point

D. A lap joint with one piece overlapping the other by 50 mm to absorb all movement within the overlap

71. A carpenter installs metal step flashing along a roof-to-wall intersection. At the top of the intersection (near the ridge), the step flashing terminates. How must this termination be detailed to prevent water entry?

A. The top piece of step flashing is sealed to the wall with a thick bead of roofing cement at the terminal end

B. The top step flashing piece is extended 300 mm past the last shingle for additional coverage at the ridge

C. A cricket or saddle is installed at the termination if the wall continues above the ridge of the intersecting roof

D. The top step flashing is tucked behind the ridge cap shingles and under the housewrap above, creating a continuous water-shedding path from the wall surface over the flashing and down the roof

72. A carpenter is installing fibre cement lap siding and reaches a window head (top). The head casing (trim board above the window) is already installed. A metal drip cap (Z-flashing) must be installed

above the head casing. Where exactly does the drip cap sit relative to the head casing and the siding above?

A. The drip cap sits on top of the siding course above the window with its lower edge covering the trim

B. The drip cap upper leg tucks behind the siding course above and behind the housewrap, while the lower leg extends over the top edge of the head casing — water from the wall above flows over the drip cap and drips off the lower leg, clearing the trim below

C. The drip cap is installed beneath the head casing with its upper leg behind the casing and lower leg visible

D. The drip cap is installed over the head casing with both legs visible for a decorative metal trim effect

73. A carpenter is completing an exterior wall and must verify that the weather-resistive barrier (housewrap) has been properly installed before the cladding covers it. What key installation details must the carpenter check?

A. The housewrap colour matches the project specification and the brand name is visible on the printed side

B. The housewrap is installed with the printed side facing inward toward the sheathing for UV protection

C. All horizontal laps are shingled (upper course laps over lower), vertical laps overlap at least 150 mm, all penetrations are flashed and taped, and the housewrap is integrated with window and door flashing

D. The housewrap extends at least 300 mm below grade for foundation moisture protection at the base wall

74. A carpenter is installing vinyl corner posts at the outside corners of a building. The corner posts extend from the bottom of the first siding course to the soffit. When measuring the corner post length, the carpenter cuts it shorter than the full floor-to-soffit distance. Why is the corner post cut short?

A. The corner post is cut shorter to leave a gap of approximately 6 mm at the top for thermal expansion — if the post were cut to full length, it would buckle when it expands in hot weather because it cannot grow past the soffit

B. The corner post is cut short so the soffit J-channel covers the top of the post for a finished appearance

C. The corner post is cut short to allow the building to settle without putting stress on the vinyl post channel

D. The corner post is cut short because the bottom 50 mm is buried below the starter strip for alignment

75. A carpenter is installing a pre-finished steel exterior door and must adjust the weatherstripping for an airtight seal. After installation, a daylight test reveals that light is visible between the door slab and the weatherstripping at the bottom corner of the strike side. What does this daylight indicate?

A. The door slab has a manufacturing defect at the bottom corner that prevents full contact with the frame

B. The daylight gap is normal and present on all exterior doors at the bottom strike-side corner location

C. The weatherstripping material has deteriorated and must be replaced with a new compression strip

D. The door frame is not properly adjusted at the bottom of the strike side — the jamb must be shimmed inward to compress the weatherstripping at the daylight location for a complete seal around the full perimeter

76. A carpenter finishes installing all exterior cladding on a building and must perform a final quality inspection before the project is considered complete. What specific items should the carpenter inspect?

A. Only the visible appearance of the cladding from the street view at a distance of 3 metres from the wall

B. All flashing integration at windows, doors, and penetrations; all joint sealants and caulking; all fastener patterns and depths; all material clearances from grade; all expansion gaps at trim terminations; and all soffit ventilation for continuity and freedom from obstruction

C. Only the cladding on the front elevation because the side and rear walls are not visible from the street

D. Only the areas flagged by the building inspector during the intermediate inspection for re-inspection

77. A carpenter is installing drywall on a wall and must decide whether to install the panels horizontally or vertically. The wall is 2.74 m tall (standard 9-foot ceiling). Standard drywall panels are 1.22 × 2.44 m (4 × 8 feet). What is the preferred orientation for this wall height?

A. Vertical installation so each 2.44 m panel covers most of the wall height with a short filler at the top

B. Diagonal installation at 45 degrees to minimize the total length of joints that must be taped and finished

C. Horizontal installation with two rows of panels — the upper panel placed first with the factory-tapered edge at the horizontal mid-wall joint for easier taping

D. The orientation does not matter and the carpenter should use whichever method is fastest for the crew

78. A carpenter installs a pre-hung interior door and discovers that the door binds (sticks) near the top of the strike side when closing. The gap at the top of the hinge side is 5 mm while the gap at the bottom of the hinge side is only 1 mm. What is the most likely cause of this binding?

A. The top hinge screws have loosened, allowing the door to sag toward the strike side at the top corner

B. The door slab has swelled from moisture absorption, making it wider at the top than at the bottom edge

C. The strike plate is set too deep in the jamb mortise and the latch bolt catches on the plate edge above

D. The hinge-side jamb is not plumb — it tilts outward at the top and inward at the bottom, causing the door to lean toward the strike side at the top and creating an uneven hinge-side gap

79. A carpenter is installing crown moulding in a room where all four walls meet at 90-degree corners. The moulding has a 38/52 spring angle. The carpenter plans to cope all inside corners and mitre all outside corners. At the first inside corner, the carpenter cuts the first piece square and butts it into the corner. The second piece must be coped. What is the first step in making the coped cut?

A. Cut the profile freehand with a coping saw following the contour visible on the front face of the moulding

B. Sand the end of the moulding at a 45-degree angle to create a bevelled surface that fits over the butted piece

C. Score the moulding face with a utility knife along the profile line before cutting with the coping saw

D. Cut a 45-degree inside mitre on the moulding first — the mitre cut exposes the profile cross-section on the cut face, which the carpenter then follows with a coping saw to cut away the waste behind the profile

80. A carpenter is installing a floating laminate floor and reaches a doorway threshold where the laminate transitions to a ceramic tile hallway. The two flooring surfaces are at the same height. The manufacturer requires a 10 mm expansion gap between the laminate and any adjacent hard surface. What transition piece covers this gap?

A. A wooden saddle (flat threshold) screwed to the subfloor that bridges over both flooring materials

B. A metal carpet bar that pinches the laminate edge and the tile edge together for a tight butt joint

C. A T-molding that sits in the expansion gap between the laminate and the tile — its top surface covers the gap while its two vertical legs drop into the joint, allowing both floor surfaces to expand independently

D. A bead of colour-matched caulking applied in the expansion gap for a seamless flexible joint appearance

81. A carpenter is constructing a stairway with a total rise of 2,730 mm. The calculated number of risers is 15 at 182 mm each. The carpenter begins cutting the stringers using a framing square with stair gauges clamped at the rise (182 mm) and run (254 mm) marks. After laying out all 15 rises and 14 runs on the stringer, the carpenter must make one final adjustment before cutting. What is this adjustment?

A. Adding one riser height to the bottom of the stringer to account for the landing surface below the stair

B. Reducing the stringer width by 25 mm at the top to fit the stringer against the upper floor header

C. Cutting a bevel on the bottom of each riser notch to provide a drip edge that sheds water on exterior stairs

D. Subtracting one tread thickness from the bottom of the stringer so the first riser height equals all other risers after the treads are installed on the notches

82. A carpenter is installing solid hardwood flooring over a concrete slab. The hardwood cannot be nailed directly to concrete. What system allows hardwood flooring installation on a concrete substrate?

A. A layer of carpet padding placed on the concrete with the hardwood floating on the pad without fastening

B. A plywood subfloor installed over a moisture barrier on the concrete, using either glued-down plywood or a sleeper system (pressure-treated 2×4s fastened to the concrete) with plywood on top — the hardwood is then nailed to the plywood in the standard manner

C. Direct adhesive application of the hardwood planks to the bare concrete surface with construction adhesive

D. A self-levelling compound poured over the concrete that provides a nail-able substrate for the hardwood

83. When installing baseboard moulding at an outside corner, the carpenter uses a mitre joint. Both pieces are cut at 45 degrees. After installing the mitred corner, the carpenter discovers that the joint opens slightly — a 1 mm gap is visible at the heel (wall side) of the mitre. What is the most likely cause?

A. The outside corner of the wall is slightly greater than 90 degrees (obtuse), which causes the 45-degree mitre cuts to gap at the heel — adjusting each cut to slightly less than 45 degrees (such as 44.5 degrees) closes the gap

B. The baseboard wood has shrunk since being cut, opening the joint from both the front and back edges

C. The baseboard pieces are different thicknesses and the thinner piece pulls away from the corner surface

D. The mitre saw blade is not square to the fence and every mitre cut has a slight bevel that opens the joint

84. A carpenter is installing a kitchen countertop that has a built-in 100 mm backsplash. The countertop must be scribed to fit against an irregular wall. After scribing and trimming, the countertop sits tight against the wall. How is the countertop secured to the base cabinets below?

A. Construction adhesive is applied to the top edges of all base cabinets before the countertop is set in place

B. Finish nails are driven through the countertop surface into the cabinet frames for a permanent attachment

C. Screws are driven up through the corner blocks or mounting strips inside the base cabinets into the underside of the countertop — this method secures the top without visible fasteners on the surface and allows future removal if needed

D. The countertop weight alone holds it in position and no mechanical fastening is needed for the installation

85. A carpenter is building a stairway and the Building Code requires a guard (guardrail) on the open side of the stair. The guard must be at least 900 mm high measured vertically from the nosing line to the top of the guard. What is the maximum spacing between balusters (spindles) in the guard?

A. 150 mm maximum spacing so an adult's hand cannot fit between the balusters while gripping the rail

B. 125 mm maximum spacing so the gap matches the maximum opening in open riser stairs for consistency

C. 200 mm maximum spacing based on the standard residential spacing for all guard balusters and spindles

D. 100 mm maximum spacing — a 100 mm sphere must not be able to pass through any opening in the guard, which prevents a child's head from becoming trapped between balusters

86. When installing drywall screws, the screw head must create a specific impression in the drywall surface. The head must be set just below the paper surface in a shallow dimple without breaking the paper face. Why is breaking the paper face problematic?

A. Broken paper voids the drywall manufacturer's warranty on the fire resistance rating of the wall assembly

B. Breaking the paper destroys the holding power of the screw — the paper face provides the resistance that holds the screw head against the drywall surface; once broken, the screw pulls through the weak gypsum core

C. Broken paper creates a dust hazard when joint compound is sanded over the damaged area during finishing

D. Breaking the paper allows moisture to penetrate the gypsum core, causing the drywall to swell and crumble

87. A carpenter is installing a pocket door and discovers that the finished wall thickness (drywall + pocket frame + drywall) is 120 mm, but the door jamb at the pocket opening is only 100 mm wide. The jamb does not cover the full wall thickness. What must be done to complete the door opening trim?

A. The jamb must be extended with a piece of wood (jamb extension) added to the narrow side to bring it flush with the full 120 mm wall thickness, so the casing on both sides has a consistent reveal

B. The casing on the narrow side is installed directly against the drywall without a jamb for a simplified trim

C. The drywall on one side is built out with an additional layer to reduce the wall thickness to 100 mm

D. A wider replacement jamb is ordered from the manufacturer that matches the 120 mm wall thickness

88. A carpenter is installing ceramic tile backer board on bathroom walls and must detail the inside corner where two walls meet. How should the inside corner joint between two backer board panels be treated?

A. The corner joint is left open with no treatment because the tile and grout will cover and seal the corner

B. The corner is filled with a thick bead of silicone caulking to create a flexible, waterproof seal at the joint

C. The corner joint is taped with alkali-resistant mesh tape embedded in modified thinset, creating a reinforced, waterproof joint that resists cracking from building movement at the corner

D. The two backer board panels are butted tightly together with no gap and no treatment needed at the corner

89. A carpenter is constructing a closed-stringer stairway and must ensure that the treads and risers fit tightly into the routed grooves in the stringers. After assembling one side, the carpenter discovers that a tread has a 2 mm gap at the groove shoulder on the visible side. What causes this gap, and how is it corrected?

A. The groove was routed too wide and must be shimmed with a thin strip of wood behind the tread edge

B. The tread was cut 2 mm too short and must be replaced with a tread cut to the correct length for fit

C. The wedge behind the tread has not been driven tight enough — driving the glued wedge further pushes the tread firmly against the groove shoulder on the visible side and closes the 2 mm gap

D. The gap is caused by tread movement from seasonal wood shrinkage and will close during humid months naturally without any correction needed by the carpenter

90. A carpenter finishes installing all interior trim in a new house and performs a quality inspection before the paint crew begins. What specific defects should the carpenter check for and correct before turning the work over to the painters?

A. Only visible nail holes need to be filled because all other defects are the painter's responsibility to address

B. All nail holes filled with wood filler, all joints tight (no gaps at mitres, copes, or scarf joints), all reveals consistent (uniform 3 to 6 mm at all door and window casings), all baseboard tight to the floor or with consistent caulking gaps, all crown moulding joints tight, and all surfaces free of hammer marks, dents, and tool damage

C. Only the trim in the main living areas needs inspection because bedrooms and bathrooms are less visible

D. The inspection is performed by the painter, not the carpenter, because the painter identifies which defects need correction before the finish coats are applied to the trim surfaces

91. A carpenter is renovating a basement and discovers that the concrete block foundation wall has efflorescence — white, powdery mineral deposits on the interior surface. What does efflorescence indicate about the wall condition?

A. The blocks are deteriorating and losing their structural integrity due to the chemical breakdown of cement

B. The white deposits are mould growth that requires professional remediation before the renovation proceeds

C. Moisture is migrating through the concrete block wall from the exterior — the water dissolves mineral salts in the concrete and deposits them on the interior surface as the moisture evaporates, indicating a moisture management issue that must be addressed before finishing the wall

D. The blocks have been exposed to a chemical spill on the exterior that is leaching through the wall material

92. A renovation project involves adding a second-storey bathroom above a first-storey bedroom. The plumber routes the new drain pipe through the first-storey ceiling. After the ceiling drywall is repaired, the homeowner notices that the ceiling sags slightly where the plumber cut the ceiling joist to route the pipe. What structural error occurred?

A. The plumber cut through a ceiling joist to route the drain pipe without providing any temporary or permanent support for the cut joist — the cut joist can no longer carry its share of the ceiling load, causing the ceiling to sag at the cut location

B. The ceiling drywall was installed with too few screws after the plumber's work was completed in the area

C. The homeowner is noticing normal ceiling deflection from the additional weight of the bathroom above

D. The plumber used a pipe that is too heavy for the ceiling framing to support in the renovated bathroom

93. During a kitchen renovation, a carpenter opens a soffit above the cabinets and discovers a 100 mm diameter galvanized steel duct running horizontally through the soffit from the range hood to an exterior wall. The homeowner wants the soffit removed for an open-ceiling look. What must the carpenter do with the duct?

A. Remove the duct because the open ceiling design eliminates the need for a range hood exhaust system

B. Leave the duct exposed and paint it to match the ceiling for an industrial aesthetic in the kitchen design

C. Enclose the duct in a smaller, shallower soffit that minimizes the visual impact while concealing the duct

D. The duct must be rerouted — either through the ceiling cavity above, through the wall cavity, or through the attic — so the exhaust path is maintained while the soffit is removed as the homeowner requested

94. A carpenter is performing a renovation and must install a new support beam in the basement. The engineer specifies an LVL beam with specific bearing length requirements at each end. The carpenter prepares the beam pockets in the foundation walls by chipping out concrete to create the pocket. What must the carpenter verify about each pocket before setting the beam?

A. That the pocket colour matches the surrounding concrete for a consistent appearance in the basement

B. That the beam pocket is the correct size (width, height, and depth) to receive the beam with the required bearing length plus clearance on three sides (12 mm minimum air gap on sides and back to prevent moisture contact between the wood and the concrete)

C. That the pocket extends completely through the foundation wall for ventilation around the beam end

D. That the pocket is painted with waterproof coating before the beam is installed for moisture protection

95. A carpenter is adding insulation to the exterior of an existing basement foundation wall as part of an energy retrofit. The rigid foam insulation must be protected above grade because it deteriorates when exposed to UV radiation and physical damage. What material is typically used to protect the above-grade portion of the exterior foundation insulation?

A. A layer of paint applied directly to the rigid foam surface for UV protection and aesthetic appearance

B. Stucco-like parging, fibre cement board, or a manufactured foam protection panel applied over the foam

C. A parge coat of cement-based material, a manufactured protective panel, or a durable cladding material is applied over the above-grade foam to protect it from UV degradation, impact damage, lawnmower strikes, and pest boring

D. Aluminum flashing wrapped over the foam for a durable metal surface above grade at the foundation wall

96. A carpenter is renovating a house and must replace the subfloor in a bathroom where water damage has occurred around the toilet. After removing the damaged subfloor section, the carpenter discovers that the toilet closet flange (the fitting that connects the toilet drain to the floor) is set at a height that was correct for the old subfloor thickness. The new subfloor is 3 mm thicker than the old material. What must be adjusted?

A. The closet flange height must be raised by 3 mm so it sits flush with the new, thicker subfloor surface — a flange that is below the subfloor surface prevents the wax ring from sealing properly, causing toilet leaks

B. The new subfloor must be sanded down 3 mm around the flange for a flush fit at the toilet location

C. No adjustment is needed because the wax ring compresses to accommodate the 3 mm difference easily

D. The toilet must be replaced with a taller model that compensates for the thicker subfloor underneath

97. A carpenter discovers during a renovation that the existing floor joists over a crawl space show signs of insect damage — small round holes and fine sawdust (frass) along the bottom edge of several joists. What type of insect damage is this most likely, and what action is required?

A. Carpenter ant damage — the ants excavate smooth galleries in the wood; however, the round holes with fine frass are more consistent with powder post beetle or similar wood-boring beetle activity

B. Subterranean termite damage — termites create mud tubes on the foundation and eat the wood from inside

C. Carpenter bee damage — large bees bore 12 mm diameter holes for nesting in the exposed wood surfaces

D. The small round holes with fine powdery frass indicate wood-boring beetle activity — the carpenter must report the infestation to a pest control professional for identification and treatment, and the structural integrity of the damaged joists must be evaluated for possible reinforcement or replacement

98. A carpenter is renovating an old commercial building and must install modern fire-rated assemblies at the walls and ceiling of a new tenant space. The fire separation between the tenant space and the adjacent space must achieve a 1-hour fire resistance rating. The carpenter installs 15.9 mm (5/8 inch) Type X drywall on both sides of the wall. The framing is 92 mm (3-5/8 inch) steel studs at 600 mm on centre. What additional requirement must be met for this wall to achieve the 1-hour rating?

A. A second layer of 15.9 mm Type X drywall must be added to each side for a total of two layers per side

B. The specific assembly must match a tested and listed fire-rated assembly — the drywall thickness, stud type and spacing, screw type, screw spacing, insulation type (if required), and joint treatment must all match the tested configuration exactly as specified in the ULC or GA fire resistance directory

C. The studs must be replaced with 152 mm (6 inch) studs to increase the cavity depth for additional fire resistance

D. The wall only needs one layer of Type X drywall on the fire-exposure side to achieve the 1-hour rating

99. A carpenter is renovating a house built in the 1920s and encounters original plaster walls on wood lath. The homeowner wants to keep the original plaster wherever possible for heritage character. One wall has a large crack running diagonally from a door corner to the ceiling. Can this crack be repaired without removing the plaster?

A. No, any visible crack in plaster requires complete removal and replacement with modern drywall material

B. No, diagonal cracks always indicate structural failure that requires the plaster and framing to be replaced

C. Yes — if the plaster is still firmly bonded to the lath (does not feel hollow when tapped), the crack can be repaired by widening the crack slightly, filling with patching compound, embedding fibreglass mesh tape over the crack, and applying finish coats — this preserves the original plaster while providing a lasting repair

D. Yes, but only by covering the entire wall with a skim coat of joint compound to hide all cracks at once

100. A carpenter completes a major renovation that included structural work, plumbing, electrical, insulation, drywall, and finish carpentry. The building inspector has signed off on all inspections. Before the homeowner moves back in, what final step should the carpenter recommend?

A. The homeowner should have the house professionally cleaned and request an air quality test if any hazardous materials were disturbed during the renovation — additionally, the carpenter should provide the homeowner with all project documentation including the building permit, approved drawings, inspection reports, engineering documents, material warranties, and as-built drawings for their permanent records

B. The homeowner can move in immediately because all inspections have been completed and approved

C. The carpenter should perform a final walkthrough with the homeowner but no documentation is necessary

D. The homeowner should wait 30 days after completion before occupying the space for material off-gassing

Practice Exam 15: Answer Key and Explanations

1. D — Exposed bare copper conductors can contact metal framing, junction boxes, plumbing pipes, or the carpenter's tools, creating a shock hazard or arc-flash that can cause electrocution or fire. The circuit must be identified, de-energized at the panel, and locked out before any further demolition work continues in the wall cavity.

2. B — Cap staples that stand above the housewrap surface indicate insufficient driving force. Increasing the air pressure slightly provides the additional force needed to seat the staple and cap flush with the housewrap without tearing through the material. Over-pressured staples tear through the wrap, defeating the weather barrier.

3. C — Engineered quartz contains crystalline silica bonded with polymer resins. Cutting produces dust containing both silica particles (causing silicosis) and resin compounds that cause skin sensitization and respiratory irritation. Full PPE — P100 respirator, safety glasses, and gloves — is required. Wet cutting dramatically reduces airborne dust.

4. A — Overlapping crane swing zones create a collision hazard between the cranes and a struck-by hazard for workers in the overlap area. Clearly marked exclusion zones, coordinated signal persons, and worker exclusion from overlap areas prevent incidents. Even a load outside the direct swing path can swing unexpectedly if rigging shifts.

5. D — Smoke from burning pressure-treated wood releases copper compounds, arsenic residues (in older CCA-treated stock), and other toxic chemicals that cause serious respiratory harm when inhaled. The carpenter must stop the cut immediately, leave the smoking area, and ensure adequate ventilation before resuming work.

6. B — Debris nets catch falling tools, materials, and construction debris before they reach workers or pedestrians at lower levels. A dropped tape measure from the fourth level accelerates to a velocity that can cause serious head injuries or death at ground level. The net intercepts the falling object within its catchment zone.

7. C — An unbolted mitre saw can shift, tip, or move on the workstation during a cut — especially when cutting long, heavy stock that creates leverage on the saw base. This movement can cause the blade to bind in the cut, the workpiece to shift unpredictably, or the saw to fall off the workstation entirely.

8. A — Concrete pump booms are heavy steel structures supported hydraulically. A hydraulic hose failure, pin failure, or boom joint failure can cause the boom to collapse downward without warning. The falling boom crushes anything beneath it. Workers must remain outside the boom's swing and collapse radius at all times.

9. D — Gas-powered concrete cutting generates multiple simultaneous hazards: silica dust from concrete (requiring P100 respirator), noise exceeding 100 dB (requiring hearing protection), flying debris (requiring eye/face protection), and exhaust fumes (requiring ventilation awareness). All hazards must be addressed simultaneously with appropriate PPE.

10. B — A 60-metre daisy-chained extension cord creates excessive voltage drop that reduces the power available at the saw motor. The motor compensates by drawing more current, which overheats the cord

and motor windings. The combined hazards include motor burnout, cord overheating and potential fire, and tripping hazards from the long cord.

11. C — Many pneumatic nailers use a contact trip (bump fire) mechanism that fires when the nose contacts any surface while the trigger is held. If the carpenter walks with the trigger held and the nose contacts a body part or coworker, the nailer discharges a nail into the person. Directional awareness and trigger discipline prevent penetrating injuries.

12. A — After verifying all safety devices, the carpenter must confirm the blade is sharp, properly aligned with the mitre gauge slots, running true without wobble, and set to the correct height (typically the tooth tips extend 6 to 10 mm above the material surface). A dull, misaligned, or incorrectly set blade increases kickback risk and produces poor cuts.

13. D — "A.F.F." stands for "Above Finished Floor" — the dimension is measured vertically from the top surface of the finished floor to the centre of the item being located. For an electrical outlet at "400 A.F.F.," the outlet centre is 400 mm above the finished floor level. This reference ensures consistent positioning regardless of subfloor variations.

14. B — Number of trusses = (building length ÷ spacing) + 1 = (18,000 ÷ 600) + 1 = 30 + 1 = 31 trusses. This count includes the gable end trusses at each end. The gable end trusses are typically a different configuration (with vertical infill webs) and must be identified separately on the order.

15. C — The carpenter must know the cleanout location during framing to plan a removable access panel in the finished wall. If the cleanout is covered by drywall and baseboard with no access panel, plumbers cannot reach it for future drain maintenance without demolishing the finished wall surface.

16. A — Roofing materials are installed on the sloped surface, which has a larger area than the horizontal plan projection. The slope factor for a 5/12 pitch (approximately 1.083) is multiplied by the plan area to calculate the actual sloped surface area. Using only the plan dimension underestimates the material needed.

17. D — The deck requires a 3 × 3 grid of posts: three posts across the 4.8 m width (at 0, 2.4, and 4.8 m) and three posts along the 6.0 m length (at 0, 3.0, and 6.0 m). Total = 3 × 3 = 9 post footings. Each footing must be below the frost line for the climate zone.

18. B — The 25 mm total difference between the window unit size and the rough opening (approximately 12 mm on each side) provides space for shims between the window frame and the rough opening framing. This shimming space allows the carpenter to level and plumb the window within the opening during installation.

19. A — 2R + T = 2(178) + 254 = 356 + 254 = 610 mm. This falls at the lower end of the ideal 610 to 630 mm range, confirming a comfortable climbing rhythm. The formula balances step height and depth so the stride pattern feels natural during ascent and descent.

20. C — Perimeter = 2(15.0 + 10.0) = 50.0 metres. Three plates per wall (bottom plate + top plate + double top plate) = 50.0 × 3 = 150.0 linear metres of plate material. This calculation is fundamental to the material takeoff for wall framing.

21. B — Wind buffeting the instrument and tripod causes the crosshair image to vibrate in the telescope, making precise rod readings difficult. The carpenter should shield the instrument from wind, wait for calm moments between gusts, and verify each reading with a second observation. A windscreen or repositioning to a sheltered location helps.

22. D — 3,680 ÷ 25.4 = 144.88 inches. Convert to feet: 144.88 ÷ 12 = 12 feet with 0.88 inches remaining. 0.88 inches ≈ 7/8 inch, so the span is approximately 12 feet 0-7/8 inches — effectively 12 feet 1 inch. This common conversion appears frequently on the Red Seal exam.

23. A — Slope = elevation difference ÷ horizontal distance × 100 = (100.000 − 99.200) ÷ 12.0 × 100 = 0.800 ÷ 12.0 × 100 = 6.67%. This moderate slope requires grading and drainage planning to direct surface water away from the building.

24. C — A casement window is hinged on one vertical side and swings outward (or occasionally inward) like a door. It is operated by a crank mechanism mounted on the sill. Casement windows provide excellent ventilation because the entire sash opens, and they seal tightly when closed because the sash presses against the weatherstripping.

25. B — Basic stud count = (total wall length ÷ spacing) + 1 = (42,000 ÷ 400) + 1 = 105 + 1 = 106 studs. This is the field count before adding extras for corners (typically 3–4 per corner), T-intersections (2–3 per intersection), and openings (king studs, trimmers, cripples).

26. A — Total drop = distance × slope percentage = 15.0 × 0.02 = 0.30 metres = 300 mm. A 2% slope drops 20 mm per metre of horizontal distance. Over 15 metres, this produces a 300 mm elevation change from the high end to the low end of the walkway.

27. D — Reveal strips (wood, rubber, or foam strips) are attached to the inside face of the form panel at the specified heights before the pour. The concrete fills around the strips, and when the forms are stripped, the strips are removed (peeled or pulled out), leaving clean, consistent horizontal grooves in the finished concrete surface.

28. B — Massive concrete pours generate enormous heat from the exothermic hydration reaction. The interior temperature can rise 50–70°C above ambient while the surface cools. This temperature differential creates thermal stresses that crack the concrete. Low-heat cement (Type IV or blended cements) reduces the peak temperature.

29. C — Post-tensioning ducts must follow a precise curved profile — high at mid-span and low at the supports — that mirrors the bending moment diagram. Support chairs and tie wires attached to the reinforcement cage hold the ducts at this profile. If the ducts shift during the pour, the tendon forces act at the wrong locations.

30. B — A dry shake hardener is a cement-based powder (sometimes containing metallic aggregates) broadcast onto the wet concrete surface during the bull floating stage. The float works the powder into the surface paste, creating a dense, wear-resistant finish layer that is significantly harder than untreated concrete.

31. D — A sloped top on a concrete wall requires a top form (lid panel) installed at the correct angle across the top of the open form. The concrete fills to the underside of this sloped panel, producing the angled top surface. Without the lid, the concrete would self-level horizontally, and the slope would need to be hand-finished.

32. B — Visible ice in a concrete mix means the water component has frozen — the concrete temperature has dropped below 0°C. Frozen water cannot participate in hydration, and ice crystals disrupt the cement paste structure. This concrete cannot achieve its specified strength and must be rejected entirely.

33. C — Every interruption in wet curing allows the surface to begin drying, which slows or stops the hydration reaction at the surface. Repeated or prolonged interruptions reduce the ultimate surface

strength and durability. The burlap must be kept continuously wet for the full specified curing period — even brief exposure reduces effectiveness.

34. A — A minimum 2% slope (20 mm per metre) from all four perimeter edges toward the centre drain provides adequate drainage for a residential garage. This slope moves water efficiently to the drain while maintaining a surface that is comfortable for walking and safe for vehicle parking.

35. D — Reduced vibration amplitude typically indicates the vibrator motor is overheating from extended continuous use. The motor delivers less power to the eccentric weight, reducing the vibration intensity. The carpenter should allow the motor to cool, check the vibrator's overall condition, and consider rotating with a backup vibrator.

36. B — Weep holes are formed by embedding short lengths of pipe or formed channels through the wall near the base during the pour. After stripping, these embedded tubes provide permanent drainage openings that allow groundwater collected behind the wall to drain through to the collection system on the exposed side.

37. C — Inconsistent broom texture results from varying concrete stiffness along the pour. Sections that have stiffened more resist the broom bristles and produce shallow marks, while softer sections produce deeper grooves. The carpenter must time the broom finish to the concrete's uniform stiffness — working each section when it reaches the same consistency.

38. A — A 20-minute pause can allow the surface to begin stiffening, risking a cold joint where fresh concrete meets the partially set concrete. The vibrator must penetrate at least 150 mm into the previously placed concrete to re-liquefy the surface and knit the two layers together, preventing a weak plane at the junction.

39. D — Dark streaks (trowel burns) are caused by high friction between the steel trowel blade and the dense surface paste during aggressive final trowelling passes. They are typically cosmetic and indicate effective surface compaction. On burnished floors, they are generally acceptable; on floors requiring uniform colour, lighter finishing pressure reduces them.

40. B — Chamfer strips replace fragile sharp 90-degree concrete corners with bevelled 45-degree edges that resist chipping and spalling from impact, form stripping, and freeze-thaw cycling. A sharp concrete corner breaks from even minor contact. The chamfered edge distributes impact forces over a wider area and sheds water.

41. A — A lift that is too thick cannot be fully consolidated by the vibrator because the vibrator head cannot reach the bottom of the thick lift. Trapped air at the bottom of the lift produces honeycombing — voids between aggregate particles where the cement paste did not fill the spaces due to inadequate vibration.

42. C — A retaining wall resists lateral earth pressure that creates bending in the wall. The earth-retention side is the tension face where the concrete fibres are being stretched apart. Horizontal reinforcement on this tension face resists these tensile stresses. Closer bar spacing provides more steel area to carry the greater tensile forces.

43. B — Crown-up installation means the natural upward bow faces upward. Under load (subfloor, furniture, occupants), the joist deflects downward, straightening the crown toward a level position. Crown-down installation creates a built-in sag that worsens under load, producing a noticeable dip in the floor.

44. D — The bottom plate is nailed to the subfloor and rim joist with two rows of 82 mm nails staggered at approximately 400 mm on centre. This nailing pattern provides a secure structural connection that resists lateral sliding (from wind and seismic forces) and uplift forces (from wind suction on the roof transferred through the walls).

45. A — With narrow wall sections between closely spaced windows, each king stud between adjacent windows carries the combined concentrated loads from both adjacent headers. The carpenter must verify that a single king stud can support this doubled load without crushing — wider openings under heavier loads may require doubled king studs.

46. C — A flared skylight shaft widens the light cone from the smaller roof opening to a larger ceiling opening below. This spreads the natural light over a wider area of the room, maximizing the daylight benefit from the skylight. A straight shaft (same size top and bottom) delivers light to a smaller area directly below.

47. B — Temporary diagonal braces are the primary tool for adjusting wall plumb after framing. The brace at the northeast corner is adjusted — shortened or lengthened — to push the top of the wall inward until the plumb bob confirms the corner is perfectly vertical. Once plumb, the brace is permanently secured.

48. D — Lookout rafters (horizontal blocks) extend outward from the first inboard common rafter past the gable end wall to support the fly rafter at regular intervals along its length. The lookouts are nailed to the inboard rafter and to the fly rafter, creating a structural framework that supports the rake overhang.

49. A — Cripple studs below a window sill maintain the regular on-centre stud spacing module so sheathing and drywall panel edges land on framing for nailing. They also support the rough sill at the specified height. In non-bearing walls, the cripples do not carry structural loads from above.

50. C — The double top plate lap at wall intersections ties the two walls together structurally. This lapped joint transfers horizontal forces (wind, seismic) between the walls, preventing the partition from separating from the exterior wall under lateral loading. Without this lap, the walls are connected only by nails at the corner stud.

51. B — The Building Code requires a minimum guard height of 900 mm (approximately 36 inches) for residential decks, measured from the deck surface to the top of the guard rail. This height prevents adults from toppling over the guard during normal use. Some jurisdictions require 1,070 mm for guards adjacent to certain conditions.

52. D — Most OSB subfloor panels have a grade stamp on one side. The stamped (smooth) side should face up so the building inspector can verify the panel rating, span rating, and grade during the framing inspection. The stamp also typically indicates which side the manufacturer intended to face up.

53. A — Without ceiling joists or collar ties, the structural ridge beam carries the entire vertical roof load. The end posts transfer the full beam reaction — half the total weight of all rafters, sheathing, roofing, and snow — down to the foundation. These posts are the only vertical load path for the entire roof system.

54. C — The 12 mm difference in nail penetration, multiplied across thousands of nails in the building's shear walls, cumulatively reduces the total lateral resistance below the engineer's design requirement. Shear wall capacity depends on the total shear force transferred by all nails combined — each underperforming nail reduces the total.

55. B — A 75 kg concentrated load requires solid blocking — at least 38 × 140 mm or wider lumber securely nailed between studs at each mounting bracket height. The blocking provides reliable wood-to-wood fastening for the mounting screws, which must carry the sustained static weight plus any dynamic forces from use.

56. A — The ridge board length on a hip roof = building length − building width (more precisely, building length − 2 × common rafter run). The hip rafters at each end replace the ridge at the corners, shortening the ridge by the distance equal to the common rafter run on each side.

57. A — A triple-ply beam is laminated by driving two rows of 82 mm nails in a staggered pattern from both sides. Nails from each side penetrate through two plies and into the third, creating a composite unit. The nailing pattern must match the engineer's specification to achieve the required composite beam capacity.

58. C — A 300 × 100 mm duct passing through a 140 mm deep stud wall requires a framed opening — header above, sill below, and cripple studs maintaining the module. Notching each stud 100 mm deep would remove 71% of the stud depth, far exceeding allowable limits. The framed opening transfers loads around the duct.

59. B — Web delamination is a manufacturing defect that separates the OSB web from the LVL flange, compromising the I-joist's ability to transfer shear forces between the top and bottom flanges. This defect reduces the joist's load capacity at the affected area and can lead to failure under load. The joist must be rejected.

60. D — Valley set trusses progressively decrease in height from the main roof plane downward, following the valley slope of the intersecting roof. They bear on the top chord of a girder truss rather than on wall plates. The girder truss carries the accumulated loads from all the valley set trusses to the walls below.

61. C — A plywood extension jamb or built-out buck bridges the 50 mm gap between the structural sheathing and the cladding plane. The buck provides a solid, continuous frame from the sheathing outward to the cladding surface. The door frame attaches to this buck, and flashing integrates the assembly with the weather-resistive barrier.

62. D — The starter strip adhesive must face upward near the eave edge so it bonds to the underside of the first visible shingle course installed above it. This adhesion seals the cutout slots of the first course against wind uplift. Without this properly positioned adhesive, the first course can lift in wind.

63. D — Residential gutters typically slope approximately 5 to 6 mm per 3 metres of run (about 1/16 inch per foot). This slight slope is barely perceptible to the eye but provides adequate velocity to move water toward the downspouts. A steeper slope would be visually obvious along the fascia line.

64. B — A Z-flashing at a wall step prevents water from penetrating behind the lower siding at the transition. The upper leg goes behind the upper siding and housewrap, while the lower leg extends over the face of the lower siding, directing water outward at the step rather than allowing it to run behind the lower course.

65. C — The sill pan must slope outward so water that penetrates past the window frame drains to the exterior rather than pooling on the sill or migrating inward into the wall cavity. The outward slope works with gravity to move water toward the weep holes at the front of the window frame.

66. A — A manufactured vinyl mounting block or J-channel frame installed around the pipe provides an expansion-tolerant channel for the siding to terminate into. The block allows the siding to expand and contract without pressing against the rigid pipe. Cutting siding tightly around a pipe and caulking pins the siding and causes buckling.

67. D — Panel orientation depends on the overhang width. For standard overhangs (300 to 600 mm), panels typically run perpendicular to the wall (from wall to fascia) and are supported by J-channel at the wall and F-channel at the fascia. Narrow overhangs may use panels running parallel to the wall.

68. D — Joints two courses apart must never align vertically — an offset of at least 19 mm is recommended. Combined with the 38 mm minimum offset between adjacent courses, this ensures no vertical water path exists through three successive shingle courses, maintaining the three-layer weather protection.

69. C — An apron flashing (base flashing) runs horizontally along the wall-to-roof intersection. It extends up behind the wall cladding and weather-resistive barrier and down onto the roof surface beneath the shingles. It collects water from the wall surface and directs it onto the roof.

70. A — A scarf joint (two opposing 45-degree cuts overlapped and glued) accommodates seasonal wood movement by allowing the two pieces to slide past each other as they expand and contract. The angled overlap maintains a visually tight joint because the tapered faces always overlap, even as the total length changes.

71. D — At the top of a step flashing run, the last flashing piece must be tucked behind the ridge cap shingles and under the housewrap above. This creates a continuous water-shedding path — water from the wall surface flows over the housewrap, onto the flashing, and down the roof surface without any gap at the termination.

72. B — The drip cap upper leg tucks behind the siding and housewrap above the window. The lower leg extends over the top edge of the head casing. Water flowing down the wall from above is intercepted by the upper leg, flows over the drip cap, and drips off the lower leg — clearing the head casing and window below.

73. C — All horizontal laps must be shingled (upper laps over lower). Vertical laps must overlap at least 150 mm. All penetrations must be flashed and taped. The housewrap must be integrated with all window and door flashing. These details create a continuous water and air management layer behind the cladding.

74. A — The corner post is cut approximately 6 mm shorter than the full floor-to-soffit distance to provide a thermal expansion gap at the top. If the post were cut to exact length, it would buckle when it expands in hot weather because it cannot extend past the soffit. The gap accommodates the maximum expected expansion.

75. D — A daylight gap at the bottom strike-side corner indicates the door frame is not adjusted tightly enough at that location. The jamb must be shimmed inward to compress the weatherstripping at the daylight location. A complete seal around the full perimeter is required for energy performance and weather protection.

76. B — A comprehensive final inspection covers all flashing integration, all sealant joints, all fastener patterns and depths, all material clearances from grade, all expansion gaps at trim terminations, and all soffit ventilation for continuity. Every detail contributes to the long-term performance of the building envelope.

77. C — For a 2.74 m (9-foot) wall, horizontal installation with two rows of panels is preferred. The upper panel is placed first with the factory tapered edge at the mid-wall horizontal joint. The lower panel butts against the upper, with its tapered edge at the floor (hidden by baseboard). This orientation minimizes joints and places the tapered joint at mid-wall for easier taping.

78. A — An uneven hinge-side gap (5 mm at top, 1 mm at bottom) indicates the door is sagging — the top hinge is the most common failure point. Tightening or replacing the top hinge screws (often with longer screws that reach into the stud behind the jamb) lifts the door back to its correct position and equalizes the gap.

79. D — The first step in coping is cutting a 45-degree inside mitre on the piece. This mitre cut reveals the profile cross-section on the cut face — the contour line where the painted/finished face meets the cut surface. The carpenter then follows this contour line with a coping saw, cutting away the waste behind the profile.

80. C — A T-molding sits in the expansion gap between the laminate and the tile. Its top surface bridges the gap, and two vertical legs drop into the joint on each side. The T-molding is fastened to the subfloor (not to either flooring surface), allowing both the laminate and the tile to expand independently.

81. D — The stringer is laid out for the full number of risers, but the first riser is measured from the bottom of the stringer. When treads are installed on the notches, the first riser increases by one tread thickness. Subtracting one tread thickness from the bottom of the stringer compensates, ensuring the first riser equals all others after assembly.

82. B — Hardwood cannot be nailed to concrete. A plywood subfloor installed over a moisture barrier — using either glued-down plywood or a sleeper system (pressure-treated 2×4s fastened to the concrete with the gaps filled with rigid foam) — provides a nail-able wood substrate. The hardwood is then blind-nailed to the plywood conventionally.

83. A — A 1 mm gap at the heel of an outside corner mitre indicates the wall corner is slightly greater than 90 degrees (obtuse). At 45 degrees, the mitre faces meet perfectly only at a true 90-degree corner. Adjusting each cut to slightly less than 45 degrees (such as 44.5°) closes the heel gap on the obtuse corner.

84. C — Screws driven upward through the corner blocks or mounting strips inside the base cabinets into the underside of the countertop provide secure, invisible fastening. This method allows future countertop removal (for replacement or repair) by simply removing the screws from inside the cabinets.

85. D — The Building Code requires that a 100 mm sphere must not pass through any opening in the guard system. This 100 mm maximum spacing between balusters prevents a child's head from becoming trapped between spindles — a potentially fatal entrapment hazard.

86. B — The drywall paper face provides the resistance that holds the screw head against the drywall surface. Once the paper is broken, the screw contacts only the weak gypsum core, which crumbles under the screw head pressure. The screw can pull through the broken paper zone under even moderate loads, losing all holding capacity.

87. A — A jamb extension is added to the narrow edge of the pocket door jamb to bring it flush with the full 120 mm wall thickness. This provides a consistent surface for the casing on both sides of the opening. Without the extension, the casing on the narrow side has no reveal to nail to.

88. C — The inside corner joint between backer board panels is taped with alkali-resistant fibreglass mesh tape embedded in modified thinset mortar. This creates a reinforced, waterproof joint that resists cracking from building movement. Standard paper tape and drywall compound are not moisture-resistant.

89. C — The tapered wedge behind the tread has not been driven far enough into the groove. Driving the glued wedge further pushes the tread tightly against the groove shoulder on the visible side, closing the 2 mm gap. The wedge provides the clamping force that holds every tread and riser tight in a closed-stringer stairway.

90. B — A comprehensive pre-paint inspection covers all nail holes filled, all joints tight (no gaps at mitres, copes, or scarfs), all reveals consistent, all baseboard tight to the floor, all crown joints tight, and all surfaces free of hammer marks and tool damage. Every defect visible before paint is amplified after paint.

91. C — Efflorescence indicates that moisture is migrating through the concrete block wall from the exterior. Water dissolves mineral salts (calcium hydroxide) in the concrete and carries them to the interior surface, where the water evaporates and the white mineral deposits remain. The moisture source must be addressed before finishing the wall.

92. A — The plumber cut a ceiling joist to route the drain pipe without providing temporary or permanent support for the cut member. The severed joist can no longer carry its portion of the ceiling load, causing the unsupported section to sag. A header or sister must be installed to support the cut joist ends.

93. D — The range hood exhaust duct must be maintained — it cannot be eliminated because the range hood ventilation is required by code. The duct must be rerouted through the ceiling cavity, through the wall, or through the attic space so the exhaust path continues to the building exterior while the soffit is removed.

94. B — Each beam pocket must be the correct size to receive the beam with the required bearing length (as specified by the engineer) plus a minimum 12 mm air gap on the sides and back. The air gap

prevents the wood beam end from contacting the damp concrete, which would cause moisture absorption and decay.

95. C — Above-grade exterior foundation insulation must be protected from UV degradation, physical damage (lawnmowers, foot traffic, impact), and pest boring. A parge coat, manufactured protection panel, or durable cladding covers the exposed foam and provides long-term protection from all environmental exposure.

96. A — The closet flange must sit flush with (or slightly above) the finished floor surface for the wax ring to seal properly between the toilet horn and the flange. A flange 3 mm below the subfloor surface creates a gap that the wax ring cannot bridge, resulting in toilet leaks at every flush.

97. D — Small round holes with fine powdery frass are characteristic of wood-boring beetle activity. The carpenter must report the infestation to a pest control professional for species identification and treatment. The structural integrity of the damaged joists must be evaluated — severely damaged joists may require sistering or replacement.

98. B — A fire-rated wall assembly must match a specific tested and listed configuration exactly. Every component — drywall type and thickness, stud type and spacing, screw type and spacing, insulation type, and joint treatment — must conform to the tested assembly. Substituting any component may invalidate the fire rating.

99. C — If the plaster is still firmly bonded to the lath (does not feel hollow when tapped), a diagonal crack can be repaired without removing the plaster. The crack is widened slightly, filled with patching compound, reinforced with fibreglass mesh tape, and finished with topcoats. This preserves the original heritage plaster.

100. A — The carpenter should recommend professional cleaning, potential air quality testing (if hazardous materials were encountered), and provide complete project documentation: building permit, approved drawings, inspection reports, engineering documents, material warranties, and as-built drawings. This documentation package protects the homeowner for maintenance, insurance, and future transactions.