PRACTICE EXAM 5: RED SEAL CARPENTER INTERPROVINCIAL SIMULATION (100 QUESTIONS)

1. A carpenter needs to cut a straight, precise mitre on a piece of door casing. Which power saw is specifically designed for making accurate crosscuts and mitre cuts in trim and moulding stock?

A. A portable circular saw with a ripping guide clamped to the base plate for straight cuts

B. A reciprocating saw with a fine-tooth blade installed for controlled precision cutting

C. A compound mitre saw that rotates and tilts the blade for precise angle cuts in trim material

D. A table saw with the mitre gauge set to the desired angle for crosscutting the trim stock

2. A carpenter is assembling a built-up beam by nailing three pieces of 38 × 286 mm LVL together on site. The nailing pattern must follow the engineer's specification. What type of nail is typically specified for laminating built-up beams?

A. 82 mm or 89 mm common nails driven in a staggered pattern from both sides of the beam assembly

B. 57 mm finishing nails driven flush with the surface to avoid interfering with the beam bearing connection

C. 50 mm ring-shank drywall nails driven at 100 mm on centre in a single row along the beam centre

D. 101 mm spiral nails driven only from one side of the beam to avoid splitting the opposite face lamination

3. A carpenter is selecting a blade for a reciprocating saw to cut through a wall containing both wood studs and embedded nails. Which blade type can cut through both materials without changing blades?

A. A wood-cutting blade with large, aggressive teeth designed for fast cuts through dimensional lumber

B. A fine-tooth metal-cutting blade designed for cutting steel pipe, conduit, and sheet metal fasteners

C. A carbide-tipped masonry blade designed for cutting concrete, brick, and stone block materials

D. A bi-metal demolition blade designed to cut through mixed materials including wood, nails, and screws

4. A carpenter is using a pneumatic finish nailer to install interior trim. The nailer is leaving visible depressions around each nail head where the nose of the nailer sinks into the soft wood surface. What adjustment should the carpenter make?

A. Switch to a larger-diameter nail that distributes the force of the nailer over a wider area of wood

B. Reduce the air pressure at the regulator so the nailer drives the nail flush without excessive force

C. Increase the air pressure so the nail is driven deeper and the depression is filled by the wood fibres

D. Switch to a framing nailer with a larger nose piece that creates a shallower depression on the surface

5. A CSA-approved hard hat has been in regular use on construction sites for four years. The shell shows no visible cracks, dents, or damage, and the suspension system is intact. The manufacturer recommends replacing the hard hat after five years of service. Should the carpenter continue using this hard hat?

A. No, the hard hat must be replaced after three years regardless of condition or manufacturer guidance

B. No, the hard hat should be replaced immediately because any hat used on construction sites degrades

C. Yes, but only if the hat passes a formal impact test performed by a certified testing laboratory first

D. Yes, the hard hat may continue in service until the manufacturer's five-year replacement recommendation is reached, provided ongoing inspections show no degradation

6. A carpenter is working in a trench that is 2.0 metres deep. The trench walls are sloped back from the bottom at a gradual angle rather than being vertical. What is the purpose of sloping the trench walls?

A. Sloping reduces the risk of trench wall collapse by reducing the weight of soil above the toe of the slope

B. Sloping increases the working space in the trench so more workers can operate side by side

C. Sloping allows surface water to drain into the trench for collection by the dewatering pump system

D. Sloping eliminates the need for a ladder because workers can walk up and down the sloped walls

7. A carpenter observes a coworker standing on the top cap of a step ladder to reach a ceiling fixture. Why is standing on the top cap of a step ladder prohibited?

A. The top cap is designed as a tool rest only and is not structurally rated to support a person's weight

B. Standing on the top cap raises the worker's centre of gravity above the side rails, creating a tipping hazard

C. The top cap is coated with a non-slip material that wears off over time and becomes dangerously slippery

D. The top cap is positioned at the hinge point and may collapse if weight is applied directly to the centre

8. A scaffold is being erected on a construction site. The competent person responsible for inspecting the scaffold determines that the scaffold must be tied to the building at regular intervals. What forces do these ties resist?

A. Only vertical loads from the weight of the workers and materials stored on the scaffold platform

B. Only horizontal loads from the wind acting on the scaffold face and any sheeting or tarps attached

C. Only the vibration forces from power tools being operated on the scaffold platform by the workers

D. Both pulling away from the building and pushing toward the building forces, as well as lateral sway

9. A carpenter is rigging a bundle of lumber for a crane lift. The bundle weighs 2,000 kg and will be lifted using two synthetic web slings in a basket hitch with sling angles of 60 degrees from horizontal. The slings are rated at 2,000 kg each in a vertical hitch. Is this rigging adequate?

A. No, because the basket hitch at 60 degrees reduces each sling's effective capacity below the required load per leg

B. No, because synthetic web slings cannot be used for lifting lumber due to the risk of sharp edge damage

C. Yes, because a basket hitch at 60 degrees provides adequate capacity with both slings sharing the load safely

D. Yes, because each sling is rated at 2,000 kg and two slings provide a total of 4,000 kg capacity

10. When storing pressure-treated lumber on a job site, what precaution must be taken to prevent the lumber from warping and becoming unusable?

A. Store the lumber flat on level stickers with supports at regular intervals, off the ground, and protected from weather

B. Store the lumber standing upright against a wall to minimize the footprint of the storage area on site

C. Store the lumber in direct sunlight to accelerate the drying of the treatment chemicals in the wood

D. Store the lumber in a sealed plastic wrap to prevent the treatment chemicals from leaching into the soil

11. A worker on a construction site is asked to operate a propane-powered forklift inside an enclosed building to move materials. What specific hazard does operating a propane-powered engine in an enclosed space create?

A. Propane exhaust is odourless and will not be detected by workers until dangerous concentrations build up

B. Carbon monoxide and other exhaust gases accumulate in the enclosed space, creating a toxic atmosphere that can cause illness or death

C. The propane tank may explode when exposed to the elevated temperatures inside an enclosed building

D. The forklift tires generate static electricity on indoor concrete floors that can ignite the propane fuel vapour

12. A carpenter is using a laser level to establish a reference line for installing a suspended ceiling grid. The laser projects a visible red line on all four walls of the room. Another worker walks through the laser beam repeatedly while carrying materials. Is this a safety concern?

A. No, the class of laser used in construction levels is safe and exposure to the beam at that distance poses no health risk

B. No, laser levels emit heat rather than light and the only risk is mild warmth on exposed skin surfaces

C. Yes, any laser exposure requires the worker to immediately seek medical evaluation for eye damage

D. Yes, the laser beam can cause permanent retinal damage with even brief direct eye exposure at close range

13. A carpenter is reading an elevation drawing of a house and notices that the grade line (the finished ground level) is shown as a dashed line across the base of the building. The grade line slopes away from the building on all sides. Why does the grade slope away from the building?

A. To create a level area adjacent to the building for installing walkways and landscape features

B. To direct surface water away from the foundation and prevent water accumulation against the basement walls

C. To reduce the visual height of the building from the street for compliance with neighbourhood standards

D. To expose more of the foundation wall above grade for the required inspection of the dampproofing

14. A construction drawing includes a note that reads "NTS" beside a detail. What does this abbreviation mean, and what is its significance?

A. "Not to Scale" — the detail is drawn for illustration purposes only and dimensions must not be measured from the drawing with a scale ruler

B. "New Technical Standard" — the detail reflects a recently updated building code requirement

C. "Non-Typical Section" — the detail applies only at this specific location and not elsewhere on the project

D. "Noted This Sheet" — the referenced information can be found in a note elsewhere on the same drawing

15. A carpenter must calculate the total amount of baseboard trim required for a rectangular room that measures 4.2 metres by 5.8 metres. The room has one doorway that is 900 mm wide. Approximately how many linear metres of baseboard are needed?

A. 10.0 metres based on the room perimeter without subtracting the doorway width from the total

B. 18.1 metres based on doubling the room perimeter for trim on both the top and bottom of the wall

C. 19.1 metres based on subtracting the doorway width from the perimeter and adding a waste allowance

D. 24.0 metres based on the room perimeter multiplied by a standard coverage factor for moulding

16. A carpenter is converting a roof pitch from the imperial fraction format to degrees. A 12/12 pitch means the roof rises 12 inches for every 12 inches of run. What angle in degrees does a 12/12 pitch represent?

A. 30 degrees based on dividing the pitch fraction numerator by the denominator and multiplying by 90

B. 60 degrees based on doubling the pitch fraction numerator and converting to angular measurement

C. 90 degrees based on the equal rise and run representing a vertical wall rather than a sloped roof

D. 45 degrees because the equal rise and run create an isosceles right triangle with a 45-degree slope angle

17. A carpenter needs to estimate the number of studs for a wall that is 12.0 metres long with studs at 400 mm on centre. The wall has two window openings (each 1.2 metres wide) and one door opening (900 mm wide). Approximately how many studs are needed for the basic field layout before adding extras for openings, corners, and waste?

A. 31 studs based on dividing the wall length by the spacing and adding one for the starter stud

B. 25 studs based on subtracting the total opening width from the wall length before dividing by stud spacing

C. 40 studs based on adding extra studs for each opening to the basic field calculation for the full wall

D. 15 studs based on dividing only the net wall length between openings by the stud spacing

18. A carpenter is laying out a stairway and has determined that the total rise is 2,880 mm. Using a target riser height of 180 mm, the carpenter divides 2,880 by 180 and gets exactly 16. What does this result tell the carpenter?

A. The stairway will have 16 treads and 16 risers because the tread count always equals the riser count

B. The stairway will have 17 risers because one additional riser must be added for the landing at the top

C. The stairway requires 16 risers at exactly 180 mm each, with the total rise dividing evenly into equal risers

D. The calculation is incorrect because the total rise must be divided by 175 mm instead of 180 mm

19. When a carpenter reads a construction drawing and encounters dimension strings that do not add up to the overall dimension, what should the carpenter do?

A. Use the individual dimensions and ignore the overall dimension because they are more detailed

B. Report the discrepancy to the supervisor or designer for clarification before proceeding with the work

C. Use the overall dimension and divide it equally among the individual dimension segments for consistency

D. Average the sum of the individual dimensions with the overall dimension and use the averaged value

20. A carpenter is using a transit level to establish a vertical reference line on the face of a building. Unlike a builder's level, the transit can tilt its telescope vertically. What capability does this vertical tilt provide that a standard builder's level cannot?

A. The ability to read rod measurements at greater distances than a standard builder's level telescope

B. The ability to measure horizontal angles more accurately than a standard builder's level instrument

C. The ability to project a laser beam vertically for plumbing columns and transferring floor layouts

D. The ability to plumb vertical lines, measure vertical angles, and transfer points between different elevations

21. A carpenter is establishing a control point on a job site and drives a stake into the ground. A nail is placed on top of the stake to mark the exact point. Why is a nail used on top of the stake rather than just using the top of the stake itself?

A. The nail prevents the stake from being accidentally pulled out of the ground by passing equipment

B. The nail provides a precise point location that is much more accurate than the broad top surface of the stake

C. The nail reflects sunlight and makes the stake visible from a greater distance across the job site

D. The nail prevents the stake top from absorbing water and swelling, which would change its elevation

22. A project specification calls for SPF lumber graded as No. 2 and Better for all wall framing. A carpenter receives a delivery of lumber stamped "No. 3." Should the carpenter use this lumber for wall framing?

A. Yes, because No. 3 lumber is stronger than No. 2 and exceeds the specification requirement

B. Yes, because the grade difference between No. 2 and No. 3 is insignificant for wall framing applications

C. No, but only if the building inspector specifically rejects the lumber during the framing inspection visit

D. No, because No. 3 grade is lower than the specified No. 2 and does not meet the project specification

23. A carpenter is checking the calibration of a tape measure by comparing it against a known standard. The tape reads 1 mm short at the 3-metre mark compared to the standard. What is the consequence of using this tape measure without correction?

A. All measurements taken with this tape will be 1 mm longer than the actual dimension at any length

B. The 1 mm error at 3 metres is insignificant and will not affect the quality of typical carpentry work

C. All measurements taken with this tape will be inaccurate, with the error increasing proportionally with length

D. Only measurements longer than 3 metres will be affected by the error; shorter measurements are accurate

24. A carpenter needs to calculate the length of a rafter for a roof with a 5/12 pitch and a total run of 3.0 metres. The unit line length for a 5/12 pitch is 13.0 inches per foot of run. Converting the run to imperial (3.0 m ≈ 9.84 feet), what is the approximate rafter line length?

A. 10.65 feet (approximately 3.25 metres) based on multiplying the run in feet by the unit line length and dividing by 12

B. 127.9 feet based on multiplying the run in feet by the unit line length without converting to feet

C. 9.84 feet based on using only the run without applying the unit line length factor for the pitch

D. 39.4 feet based on multiplying the run in metres by the unit line length directly without unit conversion

25. When laying out wall plates, the carpenter marks the stud positions for all exterior walls before marking interior partitions. Why are exterior walls laid out first?

A. Exterior walls use different stud spacing than interior partitions and must be calculated independently

B. Exterior walls require fire-rated studs that must be ordered separately and take longer to deliver

C. Exterior wall layout establishes the building module that interior partitions must align with for consistent sheet good nailing

D. Exterior walls are always framed first by code and the layout sequence must match the construction sequence

26. A carpenter is preparing material for a concrete pour and needs to calculate how many cubic yards of concrete are required for a footing measuring 60 feet long, 2 feet wide, and 1 foot deep. What is the volume in cubic yards?

A. 120 cubic yards based on multiplying all three dimensions in feet without converting to cubic yards

B. 4.44 cubic yards based on multiplying 60 × 2 × 1 = 120 cubic feet and dividing by 27 cubic feet per cubic yard

C. 13.3 cubic yards based on dividing 120 cubic feet by 9 square feet per square yard incorrectly

D. 40 cubic yards based on dividing the total cubic feet by 3 feet per yard instead of 27 cubic feet

27. A carpenter is building wall forms for a curved concrete retaining wall. Standard flat plywood panels cannot follow the curve. What material is commonly used for the form sheathing on curved walls?

A. Rigid fibreglass panels that can be heated and bent to follow the curve of the wall design

B. Steel plates welded together at the job site to match the exact radius of the curved wall

C. Standard plywood with saw kerfs cut on the back face at close intervals so the panel can bend to the curve

D. Thin, flexible plywood (typically 6 mm or 1/4 inch) that bends easily to follow the curved form layout

28. A carpenter is placing concrete for a garage floor slab. The specification calls for wire mesh reinforcement. The mesh is delivered in flat sheets and must be positioned at mid-depth of the slab. What is the correct method for supporting the mesh at the specified height during the pour?

A. Place the mesh on chairs or bolsters that hold it at mid-depth, and avoid stepping on the mesh during concrete placement to prevent it from being pushed to the bottom

B. Lay the mesh flat on the vapour barrier and pull it up to mid-depth with a hook tool after the concrete is placed

C. Drape the mesh over the edge forms so it hangs at mid-depth by its own weight between the form edges

D. Roll the mesh into a cylinder and stand it vertically in the slab thickness so it reinforces the full depth

29. A concrete specification calls for air-entrained concrete for an exterior exposed slab. What does air entrainment do, and why is it specified for exterior concrete in Canadian climates?

A. Air entrainment accelerates the curing process so the slab reaches full strength before the first freeze

B. Air entrainment reduces the weight of the concrete so the slab can be thinner than a non-air-entrained slab

C. Air entrainment creates microscopic air bubbles in the concrete that provide relief space for water expanding as it freezes, dramatically improving the concrete's resistance to freeze-thaw damage

D. Air entrainment increases the compressive strength of the concrete by distributing loads more evenly

30. A carpenter is building forms for a concrete stairway. Each step has a riser form that must be held at the exact height and angle. The riser forms are typically bevelled at the bottom. What is the purpose of this bevel?

A. The bevel allows the finisher's trowel to reach under the nose of each tread for complete finishing of the step surface

B. The bevel reduces the amount of concrete needed for each step by removing a triangular wedge at the nose

C. The bevel strengthens the riser form by increasing its cross-section at the connection to the stringer form

D. The bevel prevents the riser form from vibrating loose during the consolidation of the concrete with a vibrator

31. A foundation wall is being poured using a concrete pump. The pump operator advises the carpenter that the pump pressure is sufficient to fill the forms from a single discharge point at one end of the wall. Should the carpenter allow the concrete to be pumped from one point and flow the length of the wall?

A. Yes, because the pump pressure ensures uniform distribution of the concrete throughout the entire form

B. Yes, because concrete pumped under pressure does not segregate the way gravity-placed concrete does

C. No, because the forms are not designed to handle the increased lateral pressure from a pressurized fill

D. No, because the concrete must be placed as close to its final position as possible to prevent segregation from flowing horizontally

32. A carpenter strips wall forms and discovers that the tie holes (the recesses left where the snap ties passed through the wall) need to be patched. The wall will be below grade and waterproofed. What material is used to patch the tie holes?

A. Non-shrink grout or a cementitious patching compound pressed firmly into each tie hole to fill it completely and create a smooth, watertight surface

B. Expanding spray foam injected into each hole to fill the void and provide insulating value at each tie location

C. Silicone caulking applied to seal the surface of each hole while leaving the interior void unfilled

D. A wooden plug cut to the diameter of the tie hole and driven in with a hammer for a friction-tight fit

33. When building a column form (a tall, narrow form for a vertical concrete column), the formwork must resist the full hydrostatic pressure of the wet concrete from top to bottom. How does column formwork differ from wall formwork in terms of pressure?

A. Column forms experience less pressure because the smaller volume of concrete generates less weight

B. Column forms experience the same pressure as wall forms because pressure depends only on the concrete depth

C. Column forms experience the full liquid head pressure because columns are typically filled in a single rapid pour, unlike walls which are placed in lifts

D. Column forms experience no lateral pressure because the concrete is confined on all four sides equally

34. A carpenter is placing concrete for a residential basement floor slab. The specification calls for the slab to be poured monolithically with the footing — meaning the footing and the slab are poured as a single continuous placement. What advantage does a monolithic pour provide over separate footing and slab pours?

A. A monolithic pour uses less concrete than separate pours because the footing and slab share material

B. A monolithic pour creates a single, unified structure with no cold joint between the footing and the slab, improving water resistance and structural performance

C. A monolithic pour requires less formwork because the slab edge forms serve as both footing and slab forms

D. A monolithic pour cures faster because the combined mass generates more heat of hydration

35. A carpenter is pouring a concrete slab in hot weather (32°C) and notices that the concrete is setting much faster than expected. The finishers are struggling to keep up with the screeding and floating. What should the carpenter request from the concrete supplier for subsequent loads?

A. Additional water added to the mix at the batch plant to increase the slump and extend the working time

B. A lower cement content in the mix to reduce the heat generated by the hydration reaction in the slab

C. Larger aggregate in the mix to slow the setting time by increasing the thermal mass of the concrete

D. A retarding admixture added to the mix that slows the hydration reaction and extends the working time

36. When constructing forms for a concrete beam that spans between two columns, the beam form consists of a bottom panel (soffit) and two side panels. The side panels must be tall enough to contain the full beam depth. What supports the beam form at the correct height between the columns?

A. Adjustable steel shores positioned beneath the beam soffit at regular intervals along the span to carry the weight of the concrete and formwork

B. Wire cables suspended from the floor structure above that hold the beam form at the correct elevation

C. The column forms on each end, which are designed to support the full weight of the beam spanning between them

D. Temporary earth fill piled beneath the beam form that is removed after the concrete has cured fully

37. A carpenter is inspecting formwork before a concrete pour. The inspector checks that all tie connections are tight, walers are properly spaced, bracing is secure, and the forms are at the correct dimensions and elevations. One additional critical check is required. What must the inspector verify about the form surfaces?

A. That the form surfaces have been sanded smooth to prevent the concrete from bonding to rough wood grain

B. That the form surfaces are free of debris, ice, standing water, and excessive form release agent that could contaminate the concrete

C. That the form surfaces have been painted with a waterproof coating to prevent the wood from absorbing water

D. That the form surfaces have been heated to a minimum temperature of 10°C to prevent cold joints in the concrete

38. A carpenter is ordering concrete for a foundation pour. The specification calls for 25 MPa concrete with a 75 mm slump, air-entrained, delivered by ready-mix truck. What does the "25 MPa" designation represent?

A. The maximum aggregate size in the concrete mix measured in millimetres of particle diameter

B. The required 28-day compressive strength of the concrete measured in megapascals

C. The minimum cement content per cubic metre of concrete measured in megapascals of binding force

D. The air entrainment percentage expressed in megapascals of equivalent concrete density reduction

39. A carpenter has completed a concrete pour for a driveway slab. It is October, and the overnight temperature is forecast to drop to 2°C. The concrete was placed at 3:00 PM and the temperature begins dropping at 6:00 PM. Should the carpenter apply cold weather protection measures?

A. No, because 2°C is above freezing and the concrete will not be damaged at temperatures above 0°C

B. No, because the concrete has been in place for 3 hours and has already gained enough strength to resist the cold

C. Yes, but only if the temperature drops below -5°C, which is the threshold for concrete cold weather damage

D. Yes, because 2°C is below the 10°C minimum recommended curing temperature and the concrete may not gain adequate strength if left unprotected

40. A carpenter is constructing a grade beam form that spans between two pile caps. The grade beam is elevated above the ground surface and will have earth backfilled beneath it after the concrete has cured. What must be placed beneath the grade beam form to support it during the pour?

A. Temporary shoring or compacted fill that supports the weight of the formwork and wet concrete until the grade beam gains sufficient strength to span between the piles

B. Permanent concrete blocks that remain in place beneath the grade beam as part of the foundation system

C. A layer of gravel spread between the pile caps that supports the beam form and provides drainage below

D. No support is needed because the grade beam form is self-supporting as it spans between the pile cap forms

41. A carpenter is finishing a concrete slab and decides to apply a liquid curing compound instead of wet curing with burlap and water. When should the curing compound be applied?

A. After the concrete has cured for 24 hours and the surface is hard enough to walk on without leaving marks

B. Before the concrete is placed, by spraying it on the vapour barrier and granular base to pre-humidify the forms

C. After the final trowelling pass, while the surface still has a slight sheen of moisture but can withstand the spray

D. Immediately after screeding and before bull floating, so the compound is worked into the surface by the float

42. A carpenter discovers that the concrete delivered to the site has a slump of 150 mm, but the specification calls for a maximum slump of 100 mm. A higher slump indicates a wetter, more fluid mix. Should the carpenter accept this concrete?

A. No — concrete that exceeds the specified slump has too much water, which reduces strength and durability, and should be rejected or returned to the supplier

B. Yes, because the higher slump makes the concrete easier to place and finish, improving workmanship quality

C. Yes, because slump tolerance allows up to 75 mm above the specified maximum before rejection is required

D. No, but only because the higher slump increases the risk of surface discolouration, not structural issues

43. A carpenter is installing rim board at the perimeter of a floor system using wood I-joists. The rim board is fastened to the end of each I-joist. What is the correct nailing pattern for attaching the rim board to the I-joists?

A. Face-nail through the rim board into the web of each I-joist with nails at the top, middle, and bottom

B. Nail through the rim board into the top and bottom flanges of each I-joist, following the manufacturer's specified nailing pattern

C. Toenail from the I-joist flange into the face of the rim board at each joist location along the perimeter

D. Nail through the rim board into the blocking panels installed between each pair of I-joists at the rim

44. A carpenter is framing a floor system over a crawl space. The building specification calls for a minimum clearance between the bottom of the floor joists and the ground surface in the crawl space. What is the typical minimum clearance required by the Building Code?

A. 150 mm from the ground to the bottom of the joists for adequate access and ventilation circulation

B. 300 mm from the ground to the bottom of the joists for basic inspection and maintenance access

C. 250 mm from the ground to the bottom of the joists to meet minimum code accessibility requirements

D. 450 mm from the ground to the bottom of the joists to allow adequate access for inspection and maintenance

45. A carpenter is installing engineered floor joists and must make a connection where two I-joists meet over a beam. The joists lap over the beam with the ends overlapping side by side. What must be installed at this lap connection?

A. A blocking panel on each side of the lapped joists at the beam, plus nails through the overlapping flanges as specified by the manufacturer

B. A metal strap wrapped around both joists and bolted to the beam below for a positive connection

C. A plywood gusset plate nailed to both sides of the overlapping web sections to prevent the joists from separating

D. A steel saddle hanger that supports both joists from beneath the beam for maximum load transfer

46. A carpenter is framing a cantilevered bay window bump-out. The floor joists extend 600 mm past the exterior wall to support the bay window framing. The joists that cantilever are doubled. Why must the cantilevered joists be doubled?

A. Doubled joists are required at all exterior wall locations regardless of whether a cantilever is present

B. Doubled joists provide additional depth that increases the cantilever span capacity of the floor system

C. Doubled joists carry the concentrated loads from the bay window framing, walls, and roof above the cantilever

D. Doubled joists prevent the subfloor from deflecting between the single joists at the cantilevered section

47. A carpenter is building a deck and must install diagonal bracing between the posts to prevent the deck from racking (swaying side to side). Where is diagonal bracing typically installed?

A. Between the top of each post and the underside of the beam, forming a triangle in the horizontal plane

B. Between the posts in the vertical plane, running diagonally from the top of one post to the bottom of the adjacent post

C. Between the underside of the joists and the top of the beam, running diagonally across the floor framing

D. Between the bottom plate and the top plate of a short knee wall built between the posts at mid-height

48. A carpenter is framing a wall and must install fire blocking in the stud cavities at specific locations. Where does the Building Code typically require fire blocking in a wood-frame wall?

A. At the mid-height of all walls exceeding 2.4 metres in height to prevent vertical fire spread in the stud cavities

B. Only at the bottom plate of exterior walls to prevent fire from entering the wall cavity from the foundation

C. Only at the top plate of interior partition walls to prevent fire from spreading into the attic space above

D. At locations where concealed spaces connect between floors, between walls and ceilings, and at soffits where fire could spread undetected

49. When framing a load-bearing wall, the carpenter installs the studs plumb between the top and bottom plates. If a stud is installed slightly out of plumb — leaning 5 mm over its height — what is the primary structural consequence?

A. The stud's load-carrying capacity is slightly reduced because the eccentric loading creates a bending moment in addition to the axial compression, but 5 mm is within typical construction tolerance

B. The stud will eventually straighten itself under the compressive loads from the structure above

C. The stud's capacity is reduced by exactly 50% because the load is no longer centred on the cross-section

D. The stud will carry no load because any deviation from plumb transfers all forces to the adjacent studs

50. A carpenter is installing a structural ridge beam in a cathedral ceiling application where no ceiling joists or collar ties are present. Unlike a ridge board, the ridge beam must carry the full vertical load of the rafters. What supports the ridge beam at each end?

A. The ridge beam is self-supporting because it is sized to span the full building length without any posts

B. The ridge beam rests on the top plates of the gable end walls, which transfer the load to the foundation

C. Posts or columns at each end of the ridge beam transfer the beam load down through the building structure to the foundation

D. Metal straps connect the ridge beam to the gable end rafters, which transfer the load to the wall plates

51. A carpenter is framing a gable end wall on a truss roof. The gable end truss has vertical web members filling in the triangular end wall. What is the primary purpose of these vertical web members in the gable end truss?

A. They provide structural support for the roof sheathing at the gable end where no other rafters are present

B. They provide a nailing surface for the exterior sheathing and interior drywall on the gable end wall face

C. They carry the roof loads from the gable end down to the foundation through the gable end wall below

D. They provide ventilation channels between each web space for airflow from the soffit into the attic space

52. A carpenter discovers that a delivered bundle of 38 × 140 mm wall studs includes several pieces with large, loose knots that fall out when the lumber is handled. Can these studs be used for load-bearing wall framing?

A. Yes, if the loose knots are filled with construction adhesive and the studs are installed knot-side facing inward

B. Yes, if the studs are installed with the knots positioned at the mid-height where bending stress is lowest

C. No, because the lumber needs to be returned and replaced with a higher grade that matches the spec

D. No — studs with large loose knots that fall out are structurally defective because the knot hole significantly reduces the cross-section and load capacity at that point

53. A carpenter is laying out ceiling joist positions on the top plate of a load-bearing wall. The ceiling joists run in the same direction as the roof rafters above. The joists are positioned so that each joist is directly beside a rafter. Why is this positioning important?

A. It allows each ceiling joist to be face-nailed to the side of its adjacent rafter, creating the structural tie that resists the outward thrust of the rafter pair

B. It aligns the ceiling drywall nailing pattern with the roof sheathing nailing pattern for consistent appearance

C. It creates a uniform spacing pattern that simplifies the insulation installation in the attic space above

D. It prevents the ceiling joists from interfering with the roof ventilation airflow path at the eave soffit

54. When installing a roof truss system, the carpenter must ensure that the truss bearing point is located directly over the supporting wall below. If the bearing point overhangs the wall plate by even a small amount, what structural problem can occur?

A. The truss will deflect upward at the overhang, creating a visible hump in the roof surface above

B. The overhang creates a leverage point that magnifies the roof loads on the wall plate below the truss

C. The eccentric bearing can crush the top plate at the edge, cause the truss to rotate, and reduce the load-carrying capacity of the connection

D. The sheathing nails at the overhang location will miss the truss chord and fail to secure the roof surface

55. A carpenter is building a hip roof and has cut and installed all the common rafters and the ridge board. The hip rafters must now be installed. At the bottom end, each hip rafter sits on the corner of the building where two wall plates meet. What type of cut does the hip rafter require at this bearing point?

A. A standard birdsmouth identical to the common rafter birdsmouth that sits on a single wall plate

B. A compound birdsmouth (side cut) that accommodates the corner where two wall plates meet at 90 degrees

C. A simple plumb cut with no birdsmouth because the hip rafter bears on a corner post rather than the plates

D. A double birdsmouth with two seat cuts at 90 degrees to each other that wrap around the corner plates

56. A carpenter is installing permanent diagonal bracing on a roof truss system. The diagonal braces run from the bottom chord of one truss up to the top chord of a truss several bays away. What angle should these diagonal braces ideally be installed at?

A. Approximately 45 degrees from horizontal to provide the most effective resistance to lateral racking forces

B. As steep as possible (nearly vertical) to minimize the length of bracing material required for the installation

C. As shallow as possible (nearly horizontal) to connect the maximum number of trusses with each brace

D. Exactly perpendicular (90 degrees) to the continuous lateral bracing members for geometric consistency

57. A carpenter has framed all the walls on the first floor and is preparing to set the second-floor joists. Before placing the joists, what must the carpenter verify about the first-floor walls?

A. That all walls have been inspected and approved by the building inspector before any floor framing begins

B. That all interior partition walls have been drywalled before the second-floor joists are placed on top

C. That all electrical rough-in within the first-floor walls has been completed before the ceiling is closed

D. That all walls are plumb, straight, at the correct height, and properly braced before the second-floor joists add load to the wall system

58. A carpenter is installing let-in bracing in a wall that will receive non-structural rigid foam sheathing instead of structural OSB. The let-in brace is a 19 × 89 mm board set into notches in the studs at 45 degrees. How many let-in braces are typically required per wall section?

A. One brace per wall section, running from the top plate at one end to the bottom plate at the other end

B. Two braces per wall section, forming a V-pattern or X-pattern to resist racking in both directions

C. One brace for every two stud spaces to create a continuous zigzag pattern along the entire wall length

D. Three braces minimum per wall section to exceed the racking resistance provided by structural sheathing

59. A carpenter is installing the subfloor on the second storey using tongue-and-groove OSB panels. The panels must be installed with the tongue edge facing away from the starting wall. Why is the tongue oriented in this direction?

A. So each successive panel's groove slides over the previous panel's tongue, allowing the panels to be driven tight together without damage to the tongue

B. So the tongue edge faces the exterior wall for better nailing into the rim joist at the wall perimeter

C. So the groove faces the starting wall where it can be nailed directly to the wall bottom plate below

D. So the tongue faces the direction of traffic flow during construction for smoother walking on the surface

60. A carpenter is installing floor joists over a steel beam. The joist bearing on the steel beam must include a sill plate (bearing plate) between the wood joist and the steel beam. Why is this bearing plate required?

A. It provides a thermal break between the cold steel beam and the warm wood joist to prevent condensation

B. It distributes the joist bearing load over a wider area of the steel beam flange and provides a nailing surface for securing the joist

C. It raises the joist height to match the adjacent joists that bear on wood beams at the same elevation

D. It prevents galvanic corrosion between the steel beam and the iron nails used to fasten the floor joists

61. A carpenter is framing a shed dormer on an existing roof. The dormer extends across nearly the full width of the building. The existing common rafters on the dormer side of the roof must be cut to create the dormer opening. How are the cut rafter loads transferred to the remaining structure?

A. Doubled trimmer rafters at each end of the dormer opening carry the loads from headers that support the cut rafter ends

B. The dormer front wall carries all the loads directly to the floor system without any transfer through the roof

C. The ridge board is reinforced to carry the additional loads from the cut rafters as a structural ridge beam

D. The ceiling joists below the dormer are reinforced to act as transfer beams that carry the cut rafter loads

62. A carpenter is installing a valley rafter where a lower roof intersects the main roof. The valley rafter runs diagonally from the intersection of the two ridges down to the wall plate at the corner of the lower

roof addition. Valley rafters carry loads from jack rafters on both sides. Why must the valley rafter be checked for adequate depth?

A. The valley rafter must be deep enough to allow the jack rafter plumb cuts to bear fully against its face

B. The valley rafter must be deeper than the adjacent common rafters to provide clearance for the roof sheathing

C. The valley rafter carries concentrated loads from both intersecting roof planes and must resist greater bending forces than a common rafter of the same span

D. The valley rafter must match the exact depth of the hip rafter on the opposite side of the building for symmetry

63. A carpenter is installing a sliding patio door in an exterior wall. The rough opening has been framed with a header, trimmer studs, and a sill plate. Before setting the door frame, what must be applied to the rough sill?

A. A layer of rigid foam insulation cut to fill the sill area for thermal performance at the door base

B. Sill flashing membrane or sealant to create a waterproof dam that prevents water from reaching the subfloor below

C. A bevelled piece of lumber that raises the outer edge of the sill to improve drainage toward the exterior

D. A continuous bead of acoustical sealant to reduce sound transmission through the door assembly at the sill

64. When installing an exterior window, the carpenter drives a long screw through the window frame at a hinge point (typically through the jamb at the midpoint) into the structural framing behind. What is the purpose of this screw?

A. It provides additional air sealing by compressing the shims between the frame and the rough opening

B. It anchors the frame to the wall for transport protection during shipping from the factory to the job site

C. It is a temporary holding screw that is removed after the nailing flange is secured with permanent nails

D. It draws the window frame tight to the rough opening framing, preventing the frame from bowing inward or outward under wind loads

65. A carpenter is installing standing seam metal roofing panels on a residential roof. The panels are attached to the roof deck with concealed clips rather than exposed fasteners. What advantage does concealed clip attachment provide?

A. The concealed clips allow each panel to expand and contract freely along its length without buckling, and eliminate exposed fastener holes that could leak

B. The concealed clips allow the panels to be removed individually for replacement without disturbing adjacent panels

C. The concealed clips reduce the total number of fasteners required, saving material cost on the project

D. The concealed clips are visible from inside the attic, making inspection easier than exposed fasteners

66. A carpenter is installing exterior cladding over a weather-resistive barrier on a wall that includes a dryer vent exhaust penetration. How should the cladding be detailed around this penetration?

A. The cladding should cover the vent opening completely and the dryer duct should be vented into the wall cavity

B. A manufactured vent hood should be installed with the cladding cut to fit around it and sealed with caulking

C. The cladding should be installed with a large cutout around the vent and the gap filled with expanding spray foam

D. The vent should be relocated to the roof to avoid penetrating the wall cladding and weather barrier

67. A carpenter is installing cedar shingle siding and uses stainless steel nails. Why are stainless steel nails preferred over standard galvanized nails for cedar shingle applications?

A. Stainless steel nails are easier to drive into the dense cedar wood than galvanized nails of the same size

B. Stainless steel nails do not react with the natural tannins and acids in cedar that cause galvanized nails to corrode and create dark staining on the wood

C. Stainless steel nails are less expensive than galvanized nails when purchased in the quantities needed for siding

D. Stainless steel nails have a higher shear strength than galvanized nails, providing better wind resistance

68. A carpenter finishes installing the wall cladding and notices that the building wrap (housewrap) is visible through a gap where two siding panels meet at a butt joint. The butt joint between panels has no backing material behind it. What concern does this exposed housewrap present?

A. The exposed housewrap will deteriorate from UV radiation since it is only rated for limited UV exposure before degradation

B. The exposed housewrap will absorb water and channel it into the wall cavity through its woven fibre structure

C. The visible housewrap indicates that the siding panels are too short and must be replaced with longer stock

D. The exposed housewrap creates a wind noise issue as air passes through the gap and vibrates the loose material

69. A carpenter is installing a continuous soffit vent strip along the full length of the eave. The vent strip provides intake air for the attic ventilation system. What is the Building Code basis for determining how much soffit vent area is required?

A. The vent area is calculated as a ratio of the total attic floor area — typically 1/300 or 1/150 of the attic area depending on the presence of a vapour barrier in the ceiling

B. The vent area equals 10% of the total roof surface area measured along the slope of the roof surface

C. The vent area is a fixed dimension of 75 mm continuous opening along the full length of the eave regardless of attic size

D. The vent area is determined by the soffit material manufacturer and is not specified by the Building Code

70. When installing a new window in an existing wall during a renovation, the carpenter applies sill pan flashing at the bottom of the rough opening. The sill pan has upturned end dams on each side. What is the purpose of these end dams?

A. They create attachment points for the window nailing flanges at the corners of the rough opening

B. They support the window frame at the corners and prevent it from sagging during installation

C. They contain any water that reaches the sill and prevent it from running out the sides of the opening and into the wall cavity below

D. They hold the sill pan in position by friction-fitting against the trimmer studs on each side of the opening

71. A carpenter is applying building wrap and reaches an exterior light fixture junction box that protrudes through the sheathing. How should the housewrap be integrated around this penetration?

A. Cut the housewrap flush with the junction box edges and leave the joint unsealed for future electrical access

B. Cut the housewrap oversized around the box and fold the excess into the box opening for a friction seal

C. Apply the housewrap over the box and tape all edges with the manufacturer's recommended tape to seal the penetration

D. Install a manufactured rubber boot flashing over the box and lap the housewrap over the boot flange edges

72. A carpenter is installing exterior stone veneer cladding on a wood-frame wall. The stone veneer is heavy — approximately 7 kg per square metre. What additional support must the wall framing provide for this heavy cladding that is not required for lightweight cladding like vinyl siding?

A. The wall studs must be increased to 38 × 184 mm (2 × 8) to carry the additional cladding weight on the wall

B. A horizontal ledger board must be installed at the midpoint of the wall to support the cladding weight

C. The wall must be framed with steel studs instead of wood to provide adequate strength for the stone weight

D. A foundation ledge, shelf angle, or other positive bearing support at the base of the wall must carry the weight of the stone to the foundation rather than hanging it from the wall framing

73. When installing asphalt roofing shingles, the carpenter notices that the adhesive strip on the underside of each shingle (the self-seal strip) has not bonded to the shingle below after several weeks of warm weather. What causes this failure to seal?

A. The shingles were manufactured with defective adhesive that does not activate at normal temperatures

B. The shingles were installed during cold weather and the adhesive has not yet been exposed to sufficient warmth to activate — it typically requires several days of temperatures above 15-20°C to seal

C. The shingles were installed with the adhesive strip facing upward instead of downward against the course below

D. The nails were driven too low on the shingle, compressing the adhesive strip and preventing it from bonding

74. A carpenter is installing a rain screen wall assembly with vertical furring strips. The furring strips must be installed with specific characteristics to allow the drainage gap to function. What must be provided at the bottom of the drainage cavity?

A. A solid blocking strip that seals the bottom of the cavity to prevent insects and rodents from entering

B. A perforated starter strip or insect screen that allows water to drain out and air to circulate while keeping pests out

C. An open gap with no treatment that allows unrestricted airflow and water drainage at the wall base

D. A foam sill seal gasket that absorbs any water reaching the bottom of the cavity before it contacts the foundation

75. A carpenter is installing exterior trim around a garage door opening. The head casing (horizontal trim above the door) must have a drip kerf cut into its bottom edge. What is the purpose of this drip kerf?

A. It provides a channel for routing low-voltage wiring for the garage door opener sensor across the top of the opening

B. It creates a groove that interrupts the capillary action of water clinging to the underside of the trim, causing the water to drip off rather than traveling back along the soffit

C. It allows the trim board to flex during seasonal wood movement without cracking across its width

D. It creates a visual shadow line that adds architectural depth to the appearance of the garage door trim

76. A carpenter is installing vinyl siding at the gable end of a building. The siding panels must be cut at an angle to follow the roof slope. As the carpenter approaches the peak of the gable, the panel pieces become very short. What installation detail is used at the peak of the gable?

A. The last panel is face-nailed because the nailing slots are too close to the cut edge for standard slot nailing

B. Standard slot-nailing is used on all panels regardless of their size, even at the peak of the gable end wall

C. The short panels at the peak are held in place with construction adhesive only because nailing would crack them

D. A utility trim (undersill trim) is installed at the peak and the last panel is locked into it after being punched with a snap-lock punch

77. A carpenter is installing drywall on a wall and must cut a rectangular opening for an electrical junction box. The opening must be precise — too large and the cover plate will not conceal the edges; too small and the drywall will not fit over the box. What is the best method for marking the junction box location on the drywall panel before cutting?

A. Measure the box location from the adjacent panel edge and the floor, transfer the measurements to the drywall, and cut with a drywall saw

B. Apply lipstick or chalk to the edges of the junction box, press the drywall panel into position, and use the transferred marks as cut lines

C. Use a drywall router (rotary cut-out tool) to cut the opening from the face of the installed panel after it is screwed in place

D. Remove the junction box from the wall, hold it against the drywall, trace around it, and cut the traced outline

78. A carpenter is installing 15.9 mm (5/8 inch) Type X drywall on a ceiling for a fire-rated assembly. The specification requires the drywall to be installed perpendicular to the framing. The framing is at 400 mm on centre. What is the maximum screw spacing on the ceiling for this fire-rated application?

A. 150 mm on centre along every framing member for maximum holding in the fire-rated ceiling assembly

B. 300 mm on centre matching the standard wall screw spacing used for non-fire-rated wall applications

C. 200 mm on centre along every framing member for ceiling applications as required by the fire rating

D. 100 mm on centre to provide double the standard fastening density for the heavy 15.9 mm panels

79. A carpenter installs a bathtub and must install cement backer board on the walls surrounding the tub. The backer board must be positioned at a specific height relative to the tub lip. How should the bottom edge of the backer board relate to the tub?

A. The backer board should rest directly on the tub lip with full contact along the bottom edge for support

B. The backer board should hang approximately 6 mm above the tub lip with the gap sealed with silicone to allow for tub movement under load

C. The backer board should extend 50 mm below the tub lip and behind the tub flange for maximum protection

D. The backer board should stop 25 mm above the tub lip with the gap filled with grout for a rigid connection

80. A carpenter is installing hardwood flooring in a hallway that connects two rooms. The flooring runs continuously from one room through the hallway and into the second room. At the doorway threshold between the hallway and each room, should the carpenter install a transition strip?

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

B. No, transition strips are not needed because the drywall corners at the doorway act as natural expansion points

C. Yes, but only if the rooms are on different floor levels that require a reducer strip to bridge the height change

D. No — if the same hardwood flooring is continuous through the opening, no transition strip is needed because the floor moves as a unified field

81. A carpenter is selecting the correct nail length for installing baseboard to a wall. The baseboard is 16 mm thick and the drywall behind it is 12.7 mm thick. The nail must penetrate through both materials and into the wall stud behind. What minimum nail length is appropriate?

A. 32 mm to penetrate through the baseboard only, relying on the drywall to hold the nail in compression

B. 50 to 57 mm to penetrate through the baseboard and drywall and achieve adequate penetration into the stud

C. 75 mm to ensure the nail reaches completely through the stud for maximum holding power in the wall

D. 25 mm to avoid penetrating through the drywall and potentially hitting electrical wiring behind the wall

82. A carpenter is installing a pre-hung interior door and needs to determine the correct rough opening width. The door slab is 813 mm (32 inches) wide. The pre-hung unit has a jamb on each side. What is the standard rough opening width for this door?

A. 813 mm matching the door slab width exactly so the jambs compress the shims for a friction fit

B. 838 mm adding only 25 mm total to the door slab width for minimal shimming on each side

C. 787 mm subtracting 26 mm from the door width to account for the jamb thickness on each side

D. 864 mm adding approximately 50 mm total (25 mm each side) to the door slab width to accommodate the jambs plus shimming space

83. When installing crown moulding, the carpenter encounters a long wall that requires two pieces of moulding to be joined end to end. What type of joint is used to connect two pieces of crown moulding along a straight wall run?

A. A scarf joint — both pieces are cut at opposing 45-degree angles and overlapped so the joint is less visible than a butt joint

B. A butt joint — both pieces are cut square and pressed together at the meeting point along the wall

C. A finger joint — interlocking fingers are cut into both pieces and glued together for a seamless connection

D. A lap joint — one piece is notched to half its thickness and the other piece sits on top of the notch

84. A carpenter is installing kitchen countertops on base cabinets. The countertop must be scribed to fit tightly against the wall. What does "scribing" the countertop mean?

A. Measuring the wall height at multiple points to determine the correct countertop thickness for the installation

B. Drawing a reference line on the underside of the countertop using the cabinet front edge as a guide

C. Marking the contour of the irregular wall surface onto the countertop edge and trimming the countertop to match the wall profile for a tight fit

D. Cutting a groove in the back edge of the countertop that receives a flexible seal strip for a watertight wall joint

85. A carpenter is constructing a stairway in which the upper floor finish is 19 mm hardwood and the lower floor finish is 12 mm laminate. Neither floor has been installed when the stairs are being built. The total rise is measured from subfloor to subfloor as 2,700 mm. What adjusted total rise should the carpenter use for the stringer layout?

A. 2,700 mm with no adjustment because the stringer layout is based on subfloor-to-subfloor measurements

B. 2,693 mm calculated by adding the lower floor thickness (12 mm) and subtracting the upper floor thickness (19 mm) from the subfloor-to-subfloor measurement

C. 2,719 mm calculated by adding both floor thicknesses to the subfloor measurement for the total height

D. 2,681 mm calculated by subtracting both floor thicknesses from the subfloor measurement

86. A carpenter has installed baseboard and shoe moulding in a room with hardwood flooring. During the following winter, the homeowner notices a 3 mm gap appearing between the shoe moulding and the hardwood flooring along one wall. What is the most likely cause of this gap?

A. The shoe moulding nails have pulled out of the flooring due to inadequate nail length during installation

B. The finishing nails holding the shoe moulding have rusted and broken inside the wood during the winter months

C. The shoe moulding wood has shrunk during the dry winter heating season, pulling away from the floor surface

D. The hardwood flooring has contracted during the dry winter season, pulling away from the stationary shoe moulding at the wall

87. A carpenter is installing bifold closet doors. The doors are hung from a track at the top and guided by a pin at the bottom. When the doors are closed, they do not meet evenly at the centre — one door is higher than the other. What adjustment corrects this unevenness?

A. Adjusting the pivot pin height at the bottom bracket of the lower door to raise or lower it until both doors align

B. Replacing the track with a longer model to provide more travel distance for the higher door panel

C. Shimming beneath the bottom pivot bracket of the lower door to raise that side of the door panel

D. Adding weight to the top of the shorter door by installing a decorative cap that brings it to the correct height

88. A carpenter is installing a tile backsplash in a kitchen. The backsplash tile extends from the countertop surface to the bottom of the upper cabinets. What substrate should the tile be installed on?

A. Directly on the painted drywall surface using modified thinset mortar as the bonding adhesive for the tile

B. On a layer of waterproof paint applied over the existing drywall to create a moisture-resistant bonding surface

C. On cement backer board installed over the existing drywall to provide a stable, moisture-resistant substrate for the tile

D. On a self-adhesive waterproof membrane applied directly to the drywall surface as a combined substrate and adhesive

89. A carpenter is building a stairway and must determine the width of the stair stringer stock required. The riser height is 185 mm and the tread depth is 254 mm. Using the Pythagorean theorem, the diagonal step measurement (from the inner corner of one step to the inner corner of the next) is approximately 314 mm. What determines the minimum stringer width?

A. The stringer width must be at least the diagonal step measurement plus the minimum 90 mm throat depth

B. The stringer width is equal to the riser height plus the tread depth added together directly

C. The stringer width is determined by the tread depth alone because the tread cut governs the material removal

D. The stringer width must equal twice the riser height to provide adequate bearing at each step notch

90. A carpenter finishes constructing a stairway and performs a final check. Using a level, the carpenter confirms that every tread is level from front to back and side to side. Using a tape measure, the carpenter verifies that every riser height is within 2 mm of the calculated dimension. What additional check should the carpenter perform before the stairway is considered complete?

A. Verify that the nosing projection on every tread is consistent and that the handrail height is within the Building Code range

B. Verify that the stair stringers are the same species of lumber and grade for consistent appearance

C. Verify that the screw heads on the tread attachments are all driven to identical depth below the surface

D. Verify that the total number of treads and risers matches the building inspector's preliminary count from the permit application

91. A carpenter is renovating a house built in 1968 and needs to remove old floor tiles in the basement. The tiles are 9 × 9 inch (229 × 229 mm) vinyl composition tiles adhered with a black mastic. Why must the carpenter exercise extreme caution with these tiles and the adhesive?

A. Both 9×9 inch floor tiles from this era and the black mastic adhesive used to install them are highly likely to contain asbestos and must be tested before disturbance

B. The tiles contain lead compounds that become airborne when the tiles are broken during removal

C. The black mastic adhesive is a petroleum product that emits flammable vapours when exposed to air

D. The tiles were manufactured with formaldehyde binders that release toxic gas when heated or disturbed

92. During a renovation, a carpenter opens an exterior wall and discovers that the wall has batt insulation but no air barrier or vapour barrier on either side of the insulation. In a Canadian climate, what consequences can result from this missing barrier assembly?

A. The wall will have zero insulating value because batt insulation cannot function without a vapour barrier

B. The roof above this wall section will develop ice dams due to heat escaping through the unprotected wall

C. Warm, humid interior air penetrates the wall cavity, condensing on cold surfaces and causing moisture damage, while uncontrolled air leakage causes significant heat loss

D. The exterior cladding will deteriorate faster because moisture from the interior migrates outward and saturates the cladding material

93. A carpenter is adding a beam to support a new opening in a load-bearing wall during a renovation. The engineer specifies a steel W-shape beam (wide-flange I-beam). When the steel beam is installed, the wood floor joists above must bear on the top flange of the steel beam. What must be installed between the wood joists and the steel beam?

A. A felt pad to prevent squeaking between the wood joists and the steel beam surface during floor deflection

B. A wood bearing plate (sill plate) on top of the steel flange to provide a nailing surface and distribute the joist loads

C. A rubber isolation pad to prevent vibration transmission between the steel beam and the wood floor system

D. Nothing — wood joists can bear directly on steel beam flanges without any intermediate material required

94. A renovation project involves converting a single large room into two separate rooms by adding a new partition wall with a door. The new wall runs perpendicular to the ceiling joists above. After the wall is built and the drywall is installed, the homeowner notices that the ceiling sags slightly on each side of the new wall. What is the most likely cause?

A. The ceiling drywall has absorbed moisture from the new drywall compound and is sagging under the added weight

B. The new wall is a bearing wall that has attracted loads from the ceiling joists, creating deflection on each side

C. The new partition was built too tight against the ceiling, pushing the ceiling joists upward at the wall and creating visible sag between supports

D. The weight of the new partition wall on the floor is causing the floor joists below to deflect, creating the appearance of ceiling sag above

95. A carpenter is removing a chimney that passes through the floor and roof framing of a house during a renovation. After the chimney masonry is removed, the carpenter discovers that the original framers left a 50 mm clearance between the chimney and all combustible framing, as required by the Building Code. Now that the chimney is gone, what must the carpenter do with the openings in the floor and roof?

A. Frame in the floor and roof openings with new lumber to restore the structural continuity of the floor and roof systems at the former chimney location

B. Leave the openings as-is and cover them with plywood patches screwed to the surrounding framing surface

C. Fill the openings with rigid foam insulation to maintain the building's thermal envelope performance

D. Install fire stopping in the openings because the former chimney chase still requires fire separation

96. A carpenter is performing an energy retrofit on an older home by adding rigid foam insulation to the interior side of the basement foundation walls. The foam is adhered to the concrete and then covered with drywall on furring strips. What potential problem must the carpenter consider regarding moisture?

A. The rigid foam will absorb moisture from the concrete and lose its insulating value over the first winter season

B. The drywall will absorb moisture from the concrete through the rigid foam and develop mould on its surface

C. Moisture from the concrete wall may become trapped between the foam and the concrete, creating conditions for mould growth if a vapour barrier is incorrectly placed on the warm side of the foam

D. The furring strips will rot within five years due to moisture wicking from the concrete through the foam

97. A carpenter is replacing a rotted section of rim joist (band joist) in an existing building. The rim joist sits on the sill plate and the floor joists bear on the sill plate with their ends butting against the rim joist. After removing the rotted rim joist section, the carpenter discovers that the sill plate beneath it is also partially rotted. What is the correct repair sequence?

A. Replace only the rim joist section and apply a wood preservative to the rotted sill plate to stop further decay

B. Replace both the rotted rim joist section and the rotted sill plate section, ensuring the new sill plate is preservative-treated and properly anchored to the foundation

C. Install a metal flashing over the rotted sill plate and install the new rim joist on top of the flashing

D. Fill the rotted sill plate with epoxy consolidant and install the new rim joist on top of the filled repair

98. A renovation involves removing a load-bearing post in a basement to create an open floor plan. The post currently supports a main beam that carries the first-floor joists. What must replace the post to maintain the structural support?

A. The beam can span the additional distance without any support if it is a steel beam with adequate depth

B. A new post must be installed at a different location where it does not interfere with the open floor plan, with the beam reinforced or replaced to span the new distance between supports

C. The first-floor joists can be sistered with additional lumber to carry the loads without any beam support below

D. A load-bearing wall can be built at the perimeter of the basement to replace the central post and beam system entirely

99. A carpenter is renovating a bathroom and discovers that the existing subfloor beneath the toilet is spongy and deflects when stepped on. Upon further investigation, the plywood subfloor and a portion of the joist below are water-damaged from a long-term wax ring failure. What is the correct repair approach?

A. Install a new layer of plywood over the damaged subfloor to bridge across the weakened area and provide support

B. Cut out the damaged subfloor section, sister or repair the damaged joist, install new subfloor material, fix the wax ring, and ensure the moisture source is eliminated

C. Apply wood hardener to the damaged areas and reinstall the toilet with a new wax ring on the existing floor

D. Install a piece of cement backer board over the damaged plywood to distribute the toilet load more evenly

100. A carpenter completes a renovation and requests the final building inspection. The inspector identifies that a new window installed in a basement bedroom does not meet the Building Code requirements for egress. The window opening area is 0.30 m², which is below the minimum required 0.35 m². What must the carpenter do?

A. Submit a variance application to the building department requesting an exemption for the undersized window

B. Install a second window in the same room so the combined opening area of both windows meets the requirement

C. Replace the window with a larger unit that provides a minimum unobstructed opening area of 0.35 m² with no dimension less than 380 mm

D. Add a smoke detector directly outside the bedroom door as an alternative safety measure to compensate for the small window

Practice Exam 5: Answer Key and Explanations

1. C — A compound mitre saw rotates on a turntable for mitre cuts and tilts the blade for bevel cuts, making it the purpose-built tool for precise angle cuts in door casing, baseboard, crown moulding, and other trim stock. The fixed fence and clamping mechanism hold the workpiece securely while the blade descends through the material, producing clean, accurate cuts that are essential for tight-fitting joints.

2. A — Built-up beams are laminated using 82 mm or 89 mm (3-1/4 or 3-1/2 inch) common nails driven in a staggered pattern from both sides of the assembly. The nails must be long enough to penetrate through one ply and at least halfway into the adjacent ply. The staggered pattern from both sides distributes the clamping force uniformly and creates a composite beam that acts as a single structural unit.

3. D — A bi-metal demolition blade has high-speed steel teeth welded to a flexible alloy-steel body, allowing it to cut through both wood and embedded metal (nails, screws, brackets) without changing blades. This makes it the standard choice for renovation and demolition work where walls contain mixed materials. The flexible body resists breaking during aggressive cutting.

4. B — Reducing the air pressure at the regulator decreases the driving force of the pneumatic nailer, so the nail is set flush or just below the surface without the nose of the nailer sinking into soft trim stock. Excessive pressure causes the nailer to overdrive, creating depressions that require filling. Proper pressure adjustment preserves the wood surface and produces a professional finish.

5. D — The hard hat may continue in service until the manufacturer's recommended replacement date of five years, provided ongoing inspections confirm no degradation of the shell or suspension. UV exposure, temperature cycling, and chemical contact gradually weaken the polymer shell over time even without visible damage. The manufacturer's replacement schedule accounts for this invisible degradation.

6. A — Sloping the trench walls reduces the risk of collapse by reducing the mass of soil above the toe of the slope. A vertical trench wall has the full weight of the soil column bearing against an unsupported face, which can collapse without warning. Sloping reduces the driving force that causes cave-ins, making the trench safer for workers inside.

7. B — Standing on the top cap raises the worker's centre of gravity above the side rails of the ladder. With the centre of gravity above the pivot point, even a slight lean or shift in balance can cause the ladder to tip over, resulting in a fall. The highest safe standing position is marked by the manufacturer — typically the second step from the top.

8. D — Scaffold ties resist both pulling away (tension, from wind suction or workers leaning outward) and pushing toward (compression, from wind pressure or materials stacked against the building face) the building, as well as lateral sway. Without ties, the scaffold can separate from the building, push into it, or sway sideways — all of which can lead to progressive collapse.

9. C — In a basket hitch at 60 degrees from horizontal, each sling leg carries load ÷ (2 × sin 60°) = 2,000 ÷ (2 × 0.866) = 1,155 kg per leg. Each sling is rated at 2,000 kg in a vertical hitch, and a basket hitch at 60 degrees provides an effective capacity of approximately 2 × 2,000 × 0.866 = 3,464 kg total. The 2,000 kg load is within this capacity, so the rigging is adequate.

10. A — Lumber must be stored flat on level stickers (spacer strips) at regular intervals to prevent sagging and warping, elevated off the ground on blocks to prevent moisture absorption, and covered with tarps or stored under shelter to protect from rain and direct sun. Standing lumber upright against a wall causes it to bow under its own weight, and uncovered lumber absorbs moisture that causes swelling and decay.

11. B — Propane combustion produces carbon monoxide (CO), carbon dioxide, nitrogen oxides, and water vapour. In an enclosed building without adequate ventilation, carbon monoxide accumulates to dangerous levels — CO is odourless and colourless, and exposure causes headache, dizziness, confusion, loss of consciousness, and death. Propane-powered equipment requires adequate ventilation or must be operated outdoors.

12. D — Construction laser levels typically use Class 2 or Class 3R lasers that can cause retinal damage with direct, prolonged eye exposure at close range. While brief incidental exposure from a scanning beam is generally low risk, repeated direct exposure as a worker walks through the beam path should be minimized. Warning signs should be posted and workers should avoid staring into the beam.

13. B — Grading the finished ground surface away from the building directs surface water (rain, snowmelt) away from the foundation walls. Water that pools against the foundation creates hydrostatic pressure and can penetrate the foundation through cracks, joints, and porous concrete, causing basement leakage, mould growth, and structural damage.

14. A — "NTS" means "Not to Scale" — the detail is drawn for illustration purposes and does not accurately represent the proportional sizes and distances of the components shown. Dimensions must be taken from the written dimension values noted on the drawing, not by measuring the drawing with a scale ruler. NTS is used when a detail is enlarged or simplified for clarity.

15. C — Room perimeter = 2(4.2 + 5.8) = 20.0 metres. Subtract the doorway width: 20.0 − 0.9 = 19.1 metres of baseboard needed. A waste allowance of 5–10% should be added to this figure when ordering material to account for cutting waste, mitre joints, and defective pieces.

16. D — A 12/12 pitch creates a right triangle with equal rise and run (12 inches each). The angle at the base of this triangle is 45 degrees because the rise equals the run, forming an isosceles right triangle. A 12/12 pitch is the steepest standard residential roof pitch, producing a very steep 45-degree slope.

17. A — Basic field studs = (wall length ÷ spacing) + 1 = (12,000 ÷ 400) + 1 = 30 + 1 = 31 studs. This calculation gives the total number of studs for the full wall length before accounting for openings. The openings will modify this count — some studs are eliminated within the openings while king studs, trimmers, and cripples are added.

18. C — The total rise (2,880) divides evenly by the target riser height (180), producing exactly 16 risers at 180 mm each with no rounding required. This is an ideal result — every riser is identical, the total rise is perfectly accounted for, and the stairway will have 16 risers and 15 treads (one fewer tread than risers, since the upper floor serves as the final surface).

19. B — Dimension discrepancies must be reported to the supervisor or designer for clarification before any work proceeds. The carpenter must not assume which dimension is correct — acting on the wrong

dimension can result in framing that does not align with other trades' work, mispositioned openings, or structural deficiencies. The designer resolves the conflict with an official clarification.

20. D — A transit level can tilt its telescope vertically, unlike a builder's level which rotates only horizontally. This allows the transit to sight vertically for plumbing columns, walls, and formwork; to measure vertical angles for slope and grade calculations; and to transfer points between different elevations by sighting both up and down from a setup position.

21. B — A nail on top of the stake provides a precise point — a single location that can be identified to within a millimetre. The broad top surface of the stake covers an area of approximately 1,500 to 2,500 square millimetres, making it impossible to identify an exact point for measurement. The nail tip or head provides the necessary precision for layout and survey work.

22. D — Lumber grade No. 3 is lower quality than No. 2 — it permits more and larger defects (knots, wane, splits) and has lower allowable stress values. Using No. 3 lumber where No. 2 is specified violates the project specification and may not meet the structural requirements of the Building Code. The lumber must be rejected and replaced with the specified grade.

23. C — A 1 mm error at 3 metres means the tape is reading 0.033% short. This error is proportional — at 6 metres, the error is 2 mm; at 12 metres, it is 4 mm. Over the length of a building, these cumulative errors can result in walls that are out of position, openings that are undersized, and framing that does not align with adjacent components.

24. A — Rafter length = run in feet × unit line length ÷ 12 = 9.84 × 13.0 ÷ 12 = 127.92 ÷ 12 = 10.66 feet ≈ 3.25 metres. The unit line length gives inches of rafter per foot of run, so the result must be divided by 12 to convert back to feet. This shortcut method using the framing square rafter tables is faster than the full Pythagorean calculation.

25. C — Exterior walls establish the building module — the on-centre spacing pattern that all sheet goods (sheathing, drywall) are aligned to. Interior partitions must align their stud layout with this module so that sheathing and drywall panel edges consistently land on framing members for nailing. If partitions are laid out independently, panel edges may fall between studs.

26. B — Volume = 60 × 2 × 1 = 120 cubic feet. Convert to cubic yards: 120 ÷ 27 = 4.44 cubic yards. There are 27 cubic feet in one cubic yard (3 × 3 × 3 = 27). This conversion from cubic feet to cubic yards is essential for ordering ready-mix concrete in imperial units.

27. D — Thin, flexible plywood (typically 6 mm or 1/4 inch) bends easily to follow curved form layouts without breaking. It is applied over curved ribs or studs that define the wall radius, and multiple layers can be laminated to achieve the required thickness. Standard 18 mm plywood is too stiff to bend to most curve radii without fracturing.

28. A — Wire mesh must be placed on chairs or bolsters that hold it at mid-depth before the concrete is placed. Laying the mesh flat and pulling it up after the pour ("hooking") is unreliable — the mesh invariably sinks back down under the weight of the concrete and foot traffic, ending up on the bottom where it provides no crack control. Support on chairs is the only reliable method.

29. C — Air entrainment introduces billions of microscopic air bubbles (typically 4–7% air by volume) distributed uniformly throughout the concrete. When water in the concrete pore structure freezes and expands, the bubbles provide relief space for the expanding ice, preventing the internal pressure from cracking the concrete. Air-entrained concrete lasts dramatically longer in Canadian freeze-thaw climates.

30. B — The bevel at the bottom of each riser form allows the finisher to reach the full tread surface with a trowel for complete finishing right up to the face of the riser. Without the bevel, the trowel cannot access the concrete directly beneath the riser form, leaving a rough, unfinished strip at the back of each tread where it meets the riser.

31. D — Concrete must be placed as close to its final position as possible. Pumping from one end and allowing the concrete to flow the length of the form causes segregation — the coarse aggregate settles out while the cement paste flows ahead. This produces weak, honeycombed concrete at the discharge point and paste-rich, shrinkage-prone concrete at the far end.

32. A — Tie holes are patched with non-shrink grout or a cementitious patching compound packed firmly into each hole. For below-grade walls that will be waterproofed, the patches must be smooth and solid to provide a continuous surface for the waterproofing membrane. Loose or incomplete patches create voids that allow water to penetrate the wall.

33. C — Columns are typically filled rapidly in a single continuous pour rather than in controlled lifts like walls. This means the full hydrostatic pressure of the wet concrete — from the top of the column to the bottom — acts on the forms simultaneously. The full liquid head pressure requires column forms to be designed for maximum concrete pressure at the base.

34. B — A monolithic pour produces a single, continuous concrete mass with no cold joints between the footing and the slab. Cold joints (horizontal planes where fresh concrete meets previously set concrete) are weak planes that can leak water and reduce structural performance. Monolithic pours are standard for residential garage and basement slabs.

35. D — A retarding admixture slows the hydration reaction, extending the concrete's working time and delaying initial set. This gives the finishing crew more time to screed, float, and trowel the surface before the concrete stiffens. Retarders are the standard solution for hot weather concreting — adding water weakens the concrete permanently.

36. A — Beam forms are supported from below by adjustable steel shores (post shores) positioned at regular intervals along the beam span. The shores carry the combined weight of the beam form, the wet concrete, the reinforcement, and construction live loads until the concrete gains sufficient strength. Shore spacing and capacity are specified by the engineer.

37. B — Form surfaces must be free of debris (sawdust, wood chips, tie wire scraps), ice, standing water (puddles), and excessive form release agent before concrete is placed. Debris and water contaminate the concrete surface, ice creates voids when it melts, and pooled release agent causes surface defects. This cleanliness check is the final inspection step before the pour begins.

38. B — The "25 MPa" designation is the specified 28-day compressive strength of the concrete — the minimum strength the concrete must achieve when tested by crushing standard cylinders at 28 days of age. MPa (megapascals) is the metric unit for pressure/strength. A 25 MPa mix is standard for residential foundations; 30–35 MPa is common for exposed structural concrete.

39. D — At 2°C, the concrete temperature will drop below the 10°C minimum recommended for curing. Even though 2°C is above freezing, the reduced temperature dramatically slows the hydration reaction and strength gain. The concrete may not reach the critical 3.5 MPa threshold before conditions worsen further. Insulating blankets or heated enclosures should be applied.

40. A — The grade beam form spans between pile caps above the ground surface and must support the full weight of the formwork and wet concrete during the pour. Temporary shoring or compacted fill beneath the form carries this weight until the grade beam concrete gains sufficient strength to span between the piles on its own, at which point the temporary support is removed.

41. C — Liquid curing compound is applied immediately after the final finishing operation (trowelling or broom finishing), while the surface still has a slight sheen of moisture but is firm enough to withstand the spray without being damaged. Applying too early damages the finish; applying too late allows moisture loss before the membrane forms.

42. A — Concrete with a 150 mm slump when the specification requires a maximum of 100 mm has an excessively high water-to-cement ratio. This excess water reduces the 28-day compressive strength, increases permeability and porosity, reduces freeze-thaw durability, and increases shrinkage cracking. The concrete should be rejected and the supplier notified.

43. B — The rim board is nailed through its face into the top and bottom flanges of each I-joist at the perimeter. The manufacturer's nailing schedule specifies the number, size, and pattern of nails required at each joist — typically two or three nails into each flange. Nailing into the flanges (not the web) ensures a strong structural connection at the critical perimeter bearing.

44. D — The Building Code typically requires a minimum of 450 mm (18 inches) clearance from the ground surface to the underside of the floor joists in a crawl space. This clearance allows a person to access the crawl space for inspection, maintenance, pest control, and repair of mechanical systems. Insufficient clearance restricts access and violates code.

45. A — When I-joists lap over a beam, blocking panels must be installed on each side of the lapped joists at the beam location to prevent the joists from rolling (lateral buckling). The overlapping flanges are nailed together with the number and pattern of nails specified by the manufacturer. This connection transfers loads between the lapped joists across the beam.

46. C — Cantilevered joists at a bay window carry the concentrated loads of the bay window walls, headers, roof framing, and any occupancy loads above. Doubled joists provide the additional cross-section needed to carry these concentrated loads without excessive deflection at the cantilever tip. Single joists may not have adequate capacity for the combined loading.

47. B — Diagonal bracing between deck posts is installed in the vertical plane — running diagonally from the top of one post down to the bottom of the adjacent post. This triangulation prevents the deck from racking (swaying sideways under lateral loads like wind or occupant movement). Without diagonal bracing, the post-and-beam structure has no lateral resistance.

48. D — Fire blocking is required at locations where concealed spaces could allow fire to spread undetected — between floors through stud cavities, between walls and ceilings at soffits and chases, and at other transitions where air spaces connect different parts of the building. Fire blocking fills these concealed pathways with material that slows or stops fire and smoke spread.

49. A — A 5 mm lean over a standard wall height creates a slight eccentric loading — the vertical load is not perfectly centred on the stud cross-section, creating a small bending moment in addition to the axial compression. However, 5 mm is within normal construction tolerance, and the stud retains nearly all its rated capacity. Significantly greater deviations require correction.

50. C — A structural ridge beam carries the full vertical load of the rafters (unlike a ridge board, which provides only alignment). Posts or columns at each end of the beam transfer this load down through the building structure to a footing or foundation. Without ceiling joists to resist outward thrust, the ridge beam-and-post system is the only structural support for the roof.

51. B — The vertical web members in a gable end truss fill in the triangular end wall and provide a nailing surface for exterior sheathing (on the outside) and interior drywall (on the inside) of the gable end wall. Without these webs, there would be no framing to attach the finish materials to at the gable end.

52. D — Large loose knots that fall out of studs create holes that significantly reduce the stud's cross-sectional area at that point. The reduced cross-section cannot carry the same compressive load as a full-section stud, creating a structural weak point. These studs fail to meet the grading standard for structural framing and must be rejected.

53. A — Positioning each ceiling joist directly beside a rafter allows the joist to be face-nailed to the side of the rafter, creating the structural triangle (rafter-joist-plate) that resists the outward thrust of the rafter. Without this direct connection, the ceiling joists cannot effectively tie the rafter feet together, and the walls will spread apart under roof loads.

54. C — If the truss bearing point overhangs the wall plate edge, the bottom chord bears on only a portion of the plate width. This eccentric loading concentrates stress at the plate edge, which can crush the wood fibres, cause the truss to rotate, and reduce the rated capacity of the bearing connection. Proper bearing requires the full bottom chord width to rest on the plate.

55. B — The hip rafter sits on the corner where two wall plates meet at 90 degrees. A compound birdsmouth (side cut) is required because the rafter must bear on both plates simultaneously at the corner. This cut is more complex than a standard common rafter birdsmouth and requires careful layout to fit the corner geometry.

56. A — Diagonal braces are installed at approximately 45 degrees from horizontal, which provides the most effective resistance to lateral racking forces. At 45 degrees, the brace efficiently resolves both the horizontal (racking) and vertical (buckling) force components. Steeper or shallower angles are less effective at resisting the combined forces.

57. D — Before adding the load of second-floor joists and all subsequent construction above, all first-floor walls must be verified as plumb, straight, at the correct height, and properly braced. Any deficiency in the first-floor walls — out of plumb, bowed, or at the wrong height — will be locked in place once the second floor is loaded, making correction much more difficult.

58. C — Standard residential wall construction typically uses one let-in brace from the top plate at one end to the bottom plate at the other, with the brace installed at approximately 45 degrees. However, a single brace resists racking in only one direction. Two braces arranged in a V or X pattern provide racking resistance in both directions, which is the typical requirement.

59. A — Tongue-and-groove subfloor panels are installed with the tongue facing away from the starting wall so each successive panel's groove slides over the previous panel's tongue. This orientation allows the carpenter to drive each new panel tight against the previous one by tapping on the grooved edge without damaging the tongue. Driving against a tongue would crush and damage it.

60. B — A wood bearing plate on top of the steel beam provides a nailing surface for securing the joists (steel cannot be nailed) and distributes each joist's concentrated bearing load over a wider area of the steel flange. The plate also prevents the joist end grain from bearing directly on the hard steel surface, which could cause localized crushing of the wood fibres.

61. A — When common rafters are cut to create a shed dormer opening, the cut rafter loads must be transferred around the opening using doubled trimmer rafters on each side and headers at the top and bottom of the opening. The trimmers carry the loads from the headers, which in turn carry the loads from the interrupted rafter ends.

62. C — Valley rafters collect loads from jack rafters on both intersecting roof planes, creating concentrated loading that exceeds what a common rafter of the same span would carry. The valley rafter must be deep enough to resist the greater bending moment from these concentrated loads without excessive deflection. Valley rafters are typically one or two sizes deeper than common rafters.

63. B — Sill flashing membrane or sealant at the rough sill creates a waterproof dam that catches any water reaching the base of the door frame and directs it outward. The threshold area of a sliding patio door is especially vulnerable because the wide opening and low threshold create a large potential entry point for wind-driven rain and snow melt.

64. D — A long structural screw through the window jamb into the rough opening framing anchors the window frame rigidly, preventing the frame from bowing inward or outward under wind pressure differentials. Without this screw, the frame may flex between the nailing flange fasteners, causing the sash to bind, the seal to break, or the frame to rack.

65. A — Concealed clips allow each metal panel to expand and contract freely along its entire length without buckling, because the clip holds the panel at one point while allowing it to slide. Additionally, there are no exposed fastener holes in the panel surface that could leak. This combination of thermal movement accommodation and watertight surface integrity is the primary advantage.

66. C — The cladding is cut to fit around the vent hood and sealed with exterior caulking. A manufactured vent hood provides a finished, weatherproof termination for the dryer duct that sheds water and prevents pest entry. The caulking seals the gap between the hood flange and the cladding surface to prevent water infiltration behind the cladding.

67. B — Cedar contains natural tannins and acids that react with the zinc coating on galvanized nails, causing accelerated corrosion and dark staining (tannin staining) that bleeds down the shingle surface. Stainless steel is inert to these chemicals and does not react with cedar, eliminating both the corrosion problem and the staining.

68. D — Housewrap is designed for limited UV exposure — typically 90 to 120 days depending on the product. Prolonged exposure to direct sunlight degrades the polymer fibres, reducing the material's water resistance and structural integrity. The exposed housewrap at the butt joint must be covered by flashing, a batten strip, or properly lapped cladding.

69. A — The Building Code calculates required ventilation area as a ratio of the total attic floor area — typically 1/300 of the attic floor area if a vapour barrier is present in the ceiling, or 1/150 if no vapour barrier is present. This ratio is split between intake (soffit) and exhaust (ridge) vents, with a balanced distribution providing the most effective ventilation.

70. C — The upturned end dams at each side of the sill pan contain water that reaches the sill and prevent it from running laterally out the sides of the opening, where it would enter the wall cavity below the rough opening. Without end dams, water on the sill flows to the lowest point and drains into the wall through the gap between the sill flashing and the trimmer studs.

71. C — The housewrap is applied over the junction box and all edges are sealed with the manufacturer's recommended tape. This maintains the continuity of the weather-resistive barrier at the penetration. The tape must adhere to both the housewrap and the junction box surface to create a complete seal that prevents water and air from entering the wall cavity.

72. D — Heavy stone veneer cannot hang from the wall framing — its weight must be carried by a positive bearing support at the base of the wall, such as a foundation ledge (a step in the foundation wall that protrudes outward to support the stone), a steel shelf angle bolted to the foundation, or a separate footing for the veneer. This support transfers the veneer weight directly to the foundation.

73. B — The self-seal adhesive strip requires sustained warmth — typically several days of temperatures above 15–20°C — to soften and bond the shingle to the course below. Shingles installed in cold weather may not seal until the following spring or summer when temperatures rise sufficiently. Until the strips seal, the shingles are vulnerable to wind uplift.

74. B — A perforated starter strip or insect screen at the bottom of the rain screen cavity allows water to drain out and air to circulate while preventing insects, rodents, and debris from entering the cavity. A completely open gap invites pest entry, while a completely sealed gap prevents drainage. The perforated screen balances drainage, ventilation, and pest exclusion.

75. B — A drip kerf is a small groove cut into the underside of horizontal trim that interrupts the capillary action of water clinging to the bottom surface. Without the kerf, water running down the face of the trim wraps around the bottom edge and travels back along the underside, eventually reaching the wall behind the trim. The kerf causes the water to drip off at the groove.

76. D — At the peak of a gable, the siding panels become too short for standard slot-nailing. A utility trim (undersill trim) is installed at the peak, and the top edge of the last panel is punched with a snap-lock punch that creates raised tabs in the siding. These tabs lock into the utility trim, holding the panel securely without visible fasteners.

77. A — The most reliable method is to measure the junction box location from fixed reference points (the adjacent panel edge and the floor), transfer those measurements to the drywall panel, and cut the opening with a drywall saw or keyhole saw before hanging the panel. This method produces a precise opening because it uses direct dimensional transfer from known references.

78. C — Fire-rated ceiling assemblies typically require drywall screws at 200 mm (8 inches) on centre along every framing member. This closer spacing ensures that the drywall remains attached to the framing during a fire — loose or falling drywall exposes the structural framing to direct flame, defeating the fire resistance of the assembly.

79. B — The backer board should hang approximately 6 mm (1/4 inch) above the tub lip, with the gap sealed with flexible silicone sealant. This gap allows the tub to flex and move slightly under the load of water and bather without cracking the backer board or breaking the tile bond. Direct contact between the backer board and the tub transmits every movement.

80. D — When the same hardwood flooring runs continuously through a doorway opening from one room to another without a change in material, level, or direction, no transition strip is needed. The flooring expands and contracts as a single unified field. Transition strips are only required where different flooring materials meet, where floor levels change, or where an expansion gap is needed.

81. B — Total material thickness = 16 mm baseboard + 12.7 mm drywall = 28.7 mm. The nail must penetrate through both materials and at least 20–25 mm into the stud for adequate holding. A 50 to 57 mm (2 to 2-1/4 inch) finishing nail provides approximately 22–28 mm of penetration into the stud, which is sufficient for a secure baseboard attachment.

82. D — Standard rough opening width for a pre-hung interior door = door slab width + approximately 50 mm total (25 mm on each side to accommodate the jamb thickness plus shimming space). For an 813 mm door: 813 + 50 = approximately 864 mm. This provides adequate space for the jambs, shims, and adjustment during installation.

83. A — A scarf joint connects two pieces of moulding along a straight wall run. Both pieces are cut at opposing 45-degree angles and overlapped so the tapered faces slide past each other. This joint is less visible than a butt joint because the angled cut creates a gradual transition, and any seasonal wood movement opens the joint along the slope rather than creating a visible gap.

84. C — Scribing means marking the contour of the irregular wall surface onto the countertop edge using a compass or scribe tool, then trimming the countertop along the marked line so it fits tightly against the wall's actual profile. Walls are rarely perfectly straight or plumb, and scribing compensates for these irregularities to produce a tight, gap-free fit.

85. B — Adjusted total rise = subfloor-to-subfloor measurement + lower finished floor thickness − upper finished floor thickness = 2,700 + 12 − 19 = 2,693 mm. The lower floor will rise (adding to the total rise from the lower surface to the upper), while the upper floor will also rise (reducing the remaining distance from the last riser to the upper surface).

86. D — The hardwood flooring contracts during the dry winter heating season as it loses moisture, pulling away from the wall and from the shoe moulding. If the shoe moulding is correctly nailed into the flooring (not the baseboard), it moves with the floor. But if seasonal contraction exceeds the shoe moulding's ability to follow, a gap appears. This is normal seasonal movement.

87. A — The pivot pin height at the bottom bracket controls the vertical position of the door panel. Adjusting the pivot pin up or down on the lower (shorter) door raises or lowers that panel until both doors are aligned evenly at the centre when closed. This is the standard adjustment for bifold door height alignment.

88. C — A kitchen backsplash behind the countertop is exposed to water splashes, steam, and grease. Cement backer board installed over the existing drywall provides a stable, moisture-resistant substrate for the tile adhesive (thinset mortar). Tiling directly on painted drywall risks bond failure because the paint layer can delaminate from the drywall under moisture exposure.

89. B — The minimum stringer width equals the diagonal step measurement (the hypotenuse of the rise-and-run triangle for one step) plus the minimum 90 mm throat depth that must remain after the notches are cut. For a diagonal of 314 mm plus 90 mm throat = approximately 404 mm minimum. A 38 × 286 mm (2 × 12) stringer at 286 mm actual depth is typically adequate because the actual diagonal from the outer corner of the notch to the uncut edge determines the throat.

90. A — After confirming level treads and consistent risers, the carpenter must verify that the nosing projection is consistent on every tread (uneven nosings create a tripping hazard) and that the handrail height falls within the Building Code range of 865 to 965 mm measured vertically from the tread nosing. These are the final dimensional checks before the stairway is approved.

91. A — 9×9 inch vinyl composition floor tiles manufactured before 1986 — and especially the black mastic adhesive used to install them — are among the most common asbestos-containing materials found in residential renovation. Both the tiles and the adhesive must be tested for asbestos content before any disturbance. If positive, a licensed abatement contractor must perform the removal.

92. C — Without an air barrier, warm humid interior air leaks freely through the wall cavity. When this moisture-laden air contacts cold surfaces inside the wall (the back of the sheathing in winter), it condenses into liquid water, wetting the framing, insulation, and sheathing. Without a vapour barrier, moisture also diffuses through the wall by vapour pressure differential. The combined effect produces moisture damage and significant heat loss.

93. B — A wood bearing plate (sill plate) installed on top of the steel beam flange provides a nailing surface for fastening the floor joists (nails cannot be driven into steel without special fasteners) and distributes each joist's concentrated bearing load over a wider area of the steel flange. The plate is typically preservative-treated if exposed to potential condensation on the cold steel surface.

94. C — If the partition was built too tight against the ceiling — with the top plate forced against the ceiling joists — it lifts the joists slightly at the wall location. The joists on either side of the lifted point continue to carry their loads at the original elevation, creating a visible sag between the wall and the nearest supports. The partition must be built with a slight clearance at the top.

95. A — The openings in the floor and roof left by the removed chimney must be framed in with new lumber to restore the structural continuity of both the floor and roof systems. The new framing fills the gaps, provides support for the subfloor and roof sheathing, and restores the load-carrying capacity that was interrupted by the original chimney opening.

96. C — Moisture from the concrete foundation wall can become trapped between the rigid foam and the concrete. If a vapour barrier (polyethylene) is placed on the warm side of the foam — between the foam and the drywall — moisture from the concrete cannot dry inward through the foam and can accumulate, creating conditions for mould growth on the concrete surface behind the foam.

97. B — Both the rotted rim joist and the rotted sill plate must be replaced. The new sill plate must be preservative-treated (since it contacts the concrete foundation), properly anchored to the foundation with bolts, and a sill gasket installed between the treated plate and the concrete. Treating the symptom (rim joist) without addressing the cause (rotted sill plate in contact with moisture) ensures the problem will recur.

98. D — Removing a post without providing alternative support eliminates a critical link in the load path. A retarding admixture cannot solve a structural problem. The engineer must design a solution — typically reinforcing or replacing the beam to span the greater distance between supports, with a new post at a different location where it does not interfere with the desired open floor plan.

99. B — The correct repair addresses all aspects of the damage: cut out the damaged subfloor section, sister or replace the damaged joist section with new material, install new subfloor over the repaired framing, replace the wax ring seal to eliminate the moisture source, and verify that no further leakage occurs. Covering damaged material without removing it leaves the structural deficiency in place.

100. C — An egress window that does not meet the minimum opening requirements cannot serve as an emergency escape route. The window must be replaced with a larger unit that provides a minimum unobstructed clear opening area of 0.35 m² with no single dimension less than 380 mm. There is no alternative compliance path — the window must meet the dimensional requirements.