Secondary Mathematics Assessment

Sampler
521-K

Instructions for Students

Description

This sampler includes 18 Selected Response and 4 Constructed Response questions. Each question has a value of 1. The questions are from the following strands:

- Measurement
- Geometry
- Number
- Algebra
- Statistics

This test was developed to be completed in two and half hours; however, you may take an additional thirty minutes to complete the test.

Instructions

- During the test session, do not proceed until instructed to do so.
- If you receive a damaged or misprinted booklet, raise your hand and the exam supervisor will give you a new one.
- You are expected to remain in the room for the first hour and a half of the test session. You may only leave before that time for exceptional circumstances, such as illness. Should you need to temporarily leave the room, you will be accompanied by a teacher.
- To write the test you should only have the test materials, pencils, an eraser, a foreign language dictionary (if required), a ruler, and an approved calculator.
- All work must be completed in the Examination Booklet. Tear-out Formula Sheets are provided in your Examination Booklet.
- You may not discard any materials. The Examination Booklets with the exception of the Formula Sheets, must remain intact.
- You may not leave the room with any test materials.
- You will not receive assistance from, nor give assistance to, another student. If you require something during the test, raise your hand and the exam supervisor will come to you.
- During the test, the exam supervisor can only help you with the directions, not the test questions.
- Electronic communication through phones, email, or file sharing during the test is strictly prohibited. Turn off your cell-phones and all other prohibited electronic devices at this point.

Selected Response

- You must use a pencil to fill in the bubbles on the Bubble Sheet. Make sure that the question number from the Examination Booklet corresponds with the same number on the Bubble Sheet. Shade only one circle for each question. If you want to change an answer, completely erase the shaded circle and fill in your new choice.
- Although you are encouraged to show your work for the Selected Response questions in your Examination Booklet, **only the answers on the Bubble Sheet will be recorded and marked**.
- Remember to attempt all Selected Response questions. Marks will not be deducted for incorrect responses.

Constructed Response

- For the Constructed Response questions, all work must be done in the Examination Booklet and points are earned for correct work so ensure that you show all your work.
- The Answer Box is reserved for your final answer and/or summary statement. Use the blank space to show your calculations and process.
- When units are used in a question, it is expected that you include units in your answer.
- When instructed to so do, round off appropriately.

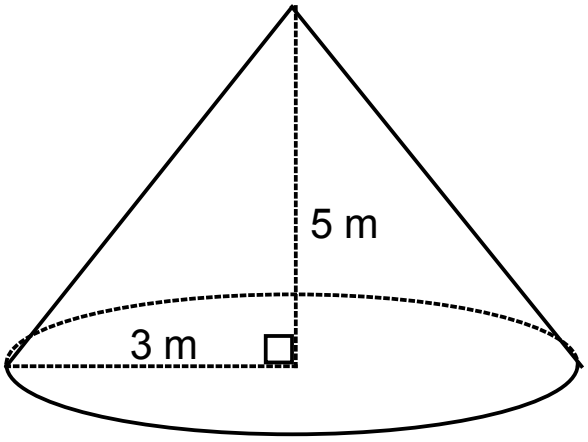
Test-Taking Strategies

- Remember that diagrams are not necessarily drawn to scale.
- Always read each question carefully.
- Study the diagrams and graphs, paying particular attention to measures, markings, and relationships before attempting an answer.
- Draw a picture or diagram to help you solve some problems.
- If you get stuck on a question, go on to the next question. Come back to any skipped questions at the end.
- Re-read the question if necessary.
- Answer every question, even if you are unsure that you are correct.
- Use any extra time to check your answers.
- Ensure that your calculator is in degrees.

Answer Key - Sampler K

1.

1) Determine the surface area of this right cone to the nearest square metre.



Ⓐ 55 m²

Ⓑ 74 m²

Ⓒ 75 m²

Ⓓ 83 m²

2) If the diameter of a sphere triples, what happens to its surface area?

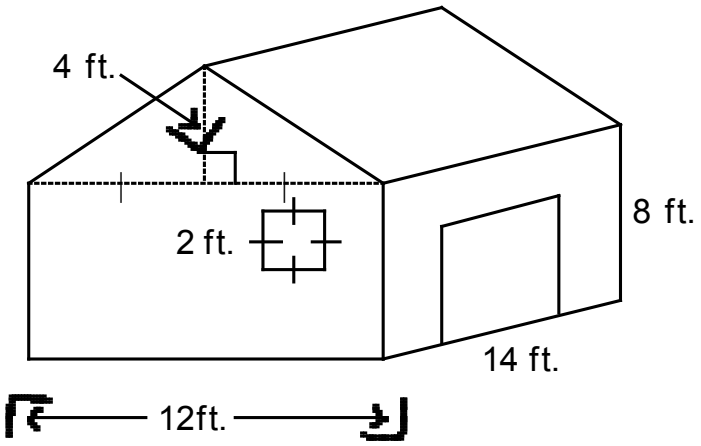
Ⓐ The surface area is squared.

Ⓑ The surface area is three times larger.

Ⓒ The surface area is six times larger.

Ⓓ The surface area is nine times larger.

3) A barn is a composite object formed by a right rectangular prism with a right triangular prism as its roof. the square window on the barn has side length 2 ft. Farmer Fred wants to paint the entire surface of his barn, including the door, but not the window. Determine the surface area to be painted to the nearest square foot.



Ⓐ 460 square feet

Ⓑ 614 square feet

Ⓒ 662 square feet

Ⓓ 666 square feet

4) A cylindrical cake pan has a diameter of 8 inches and a depth of 3 inches. What is the volume of a 3 layer cake made in this pan? Round to one decimal place.

Ⓐ 150.8 in³

Ⓑ 452.4 in³

Ⓒ 602.9 in³

Ⓓ 1 808.6 in³

5) A right cone has a height of 8 cm and a volume of 250 cm^3. Determine the radius of the base of the cone to the nearest centimetre.

Ⓐ 3 cm

Ⓑ 5 cm

Ⓒ 11 cm

Ⓓ 17 cm

6) A billboard is 5.0 m by 2.5 m. A scale diagram of the billboard must fit in a space that is 18 cm by 15 cm. Which scale would be the most reasonable for the scale diagram?

Ⓐ 300%

Ⓑ 30 cm : 1 cm

Ⓒ 1 cm : 3 m

Ⓓ 3 cm : 1 m

7) The distance between two towns on a map is 16.5 cm. The map was made using a scale of 5 cm to 100 km. What is the actual distance between the two towns?

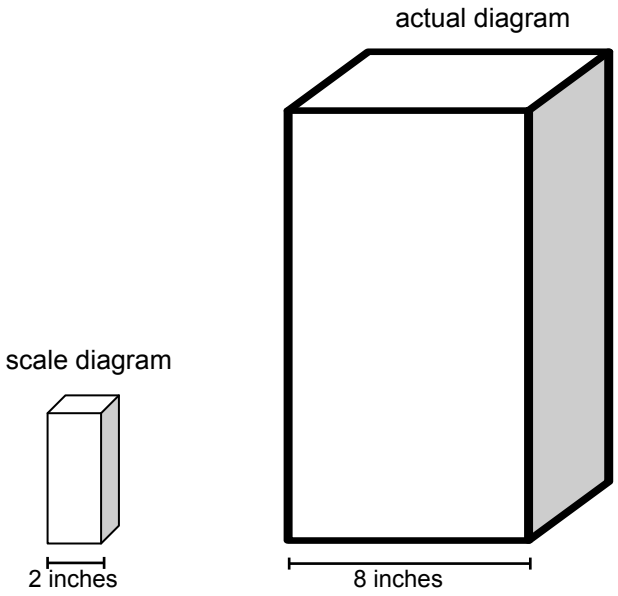
Ⓐ 135 km

Ⓑ 165 km

Ⓒ 330 km

Ⓓ 825 km

8) The box on the left is a scale diagram of the one on the right. Which of the following describes the surface area of the box on the right?



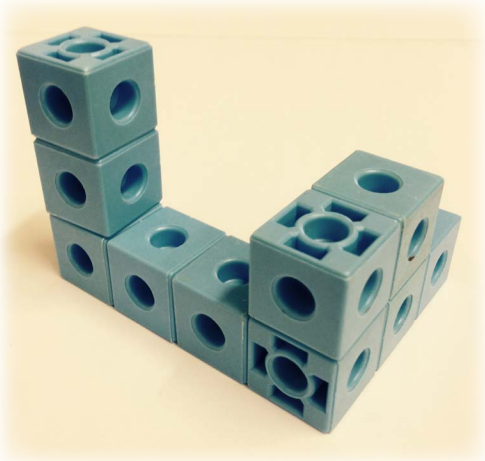
Ⓐ 4 times larger than the scale model

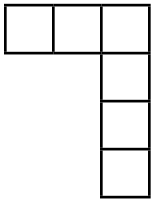
Ⓑ 12 times larger than the scale model

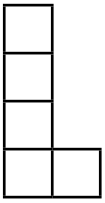
Ⓒ 16 times larger than the scale model

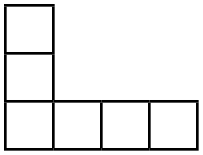
Ⓓ 64 times larger than the scale model

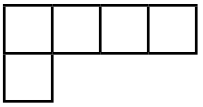
9) Determine which top view matches the object shown below.



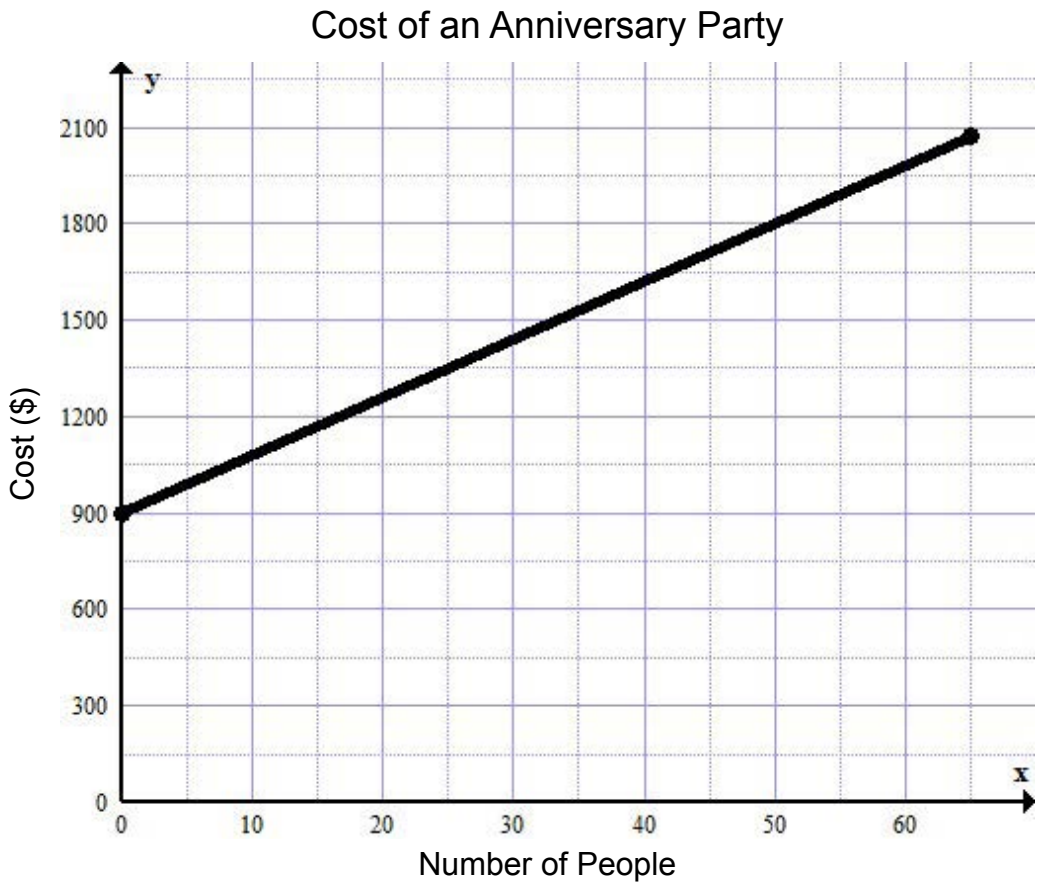
Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

10) The graph shows the cost of hosting an anniversary party. What is the maximum number of people who can attend the party for a cost of $1500?



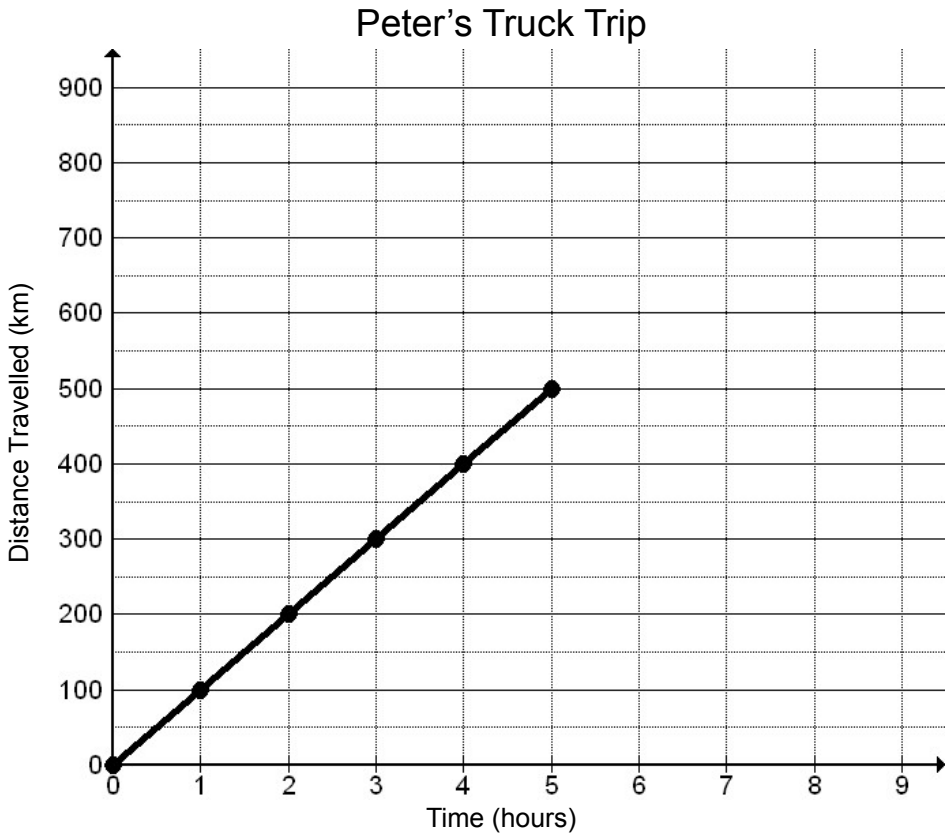
Ⓐ 27 people

Ⓑ 33 people

Ⓒ 38 people

Ⓓ 61 people

11) Based on the information provided in the graph, determine the velocity of Peter's truck after 8 hours of driving.



Ⓐ 80 km/h

Ⓑ 100 km/h

Ⓒ 500 km/h

Ⓓ 800 km/h

12) Lori wants to buy a Nissan Altima which costs $21 771. The dealership offers 1.5% financing on a 3 year (36 month) plan with a $2 500 down payment. What will be Lori's monthly payment?

Ⓐ $543.34

Ⓑ $802.96

Ⓒ $613.82

Ⓓ $1 338.26

13) Rachel was paid $1 426.32 this month. She spent $650 on rent, $225 on food, and $90 on her cell phone bill. Her sister sent her $50 for her birthday. Rachel wants to buy a television for $400, taxes included. If she buys the television, how much money will she have left for the month?

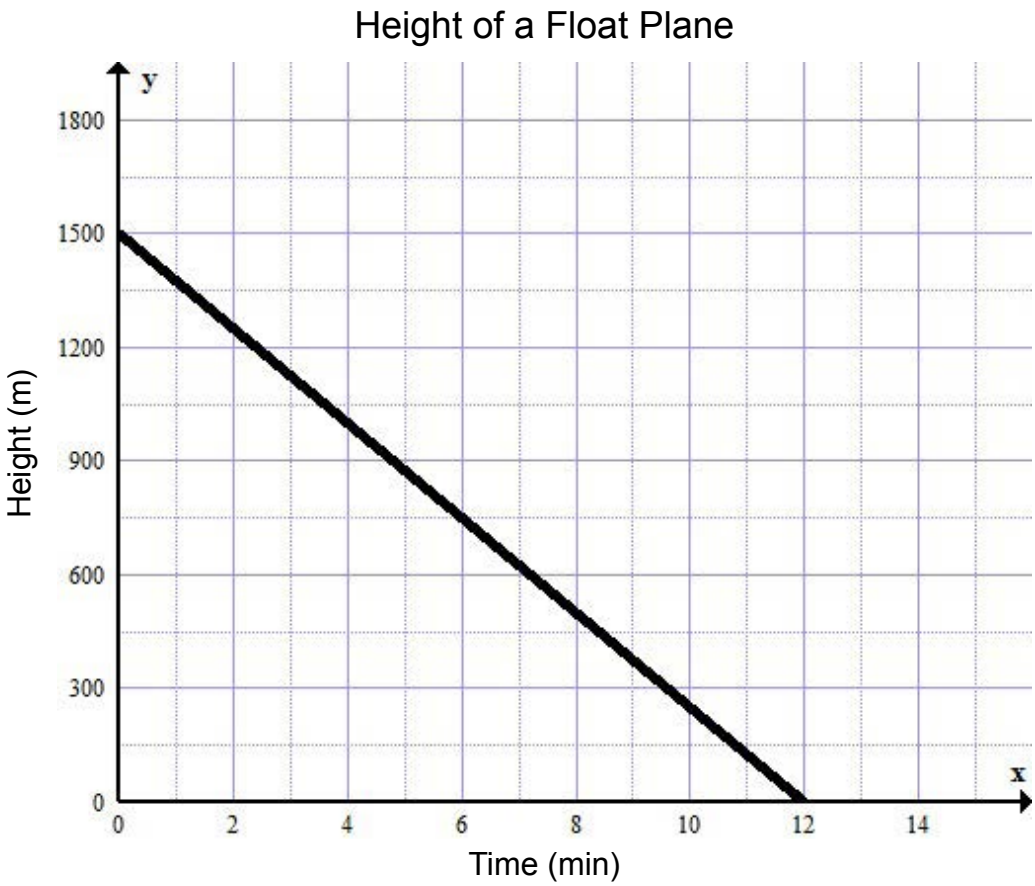
Ⓐ $511.32

Ⓑ $61.32

Ⓒ $111.32

Ⓓ $11.32

14) The graph shows the height of a float plane as it descends to land. Determine the rate of change for this graph.



Ⓐ 125 m/min

Ⓑ -0.008 m/min

Ⓒ -125m/min

Ⓓ -1500 m/min

15) A trench is being dug to lay drainage pipe. The trench must drop 1 inch for every 4 feet measured horizontally. Suppose the trench is 18 feet long, how much does it drop?

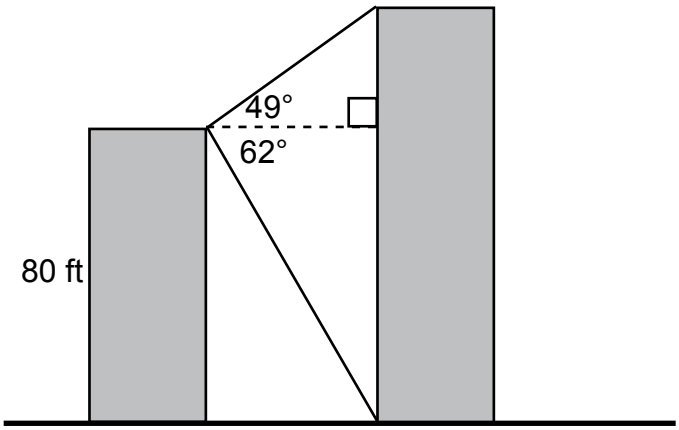
Ⓐ 0.375 inches

Ⓑ 4.5 inches

Ⓒ 54 inches

Ⓓ 72 inches

16) From the top of an 80 ft building, the angle of elevation of the top of a taller building is 49° and the angle of depression of the base of this building is 62°. Determine the height of the taller building to the nearest foot.



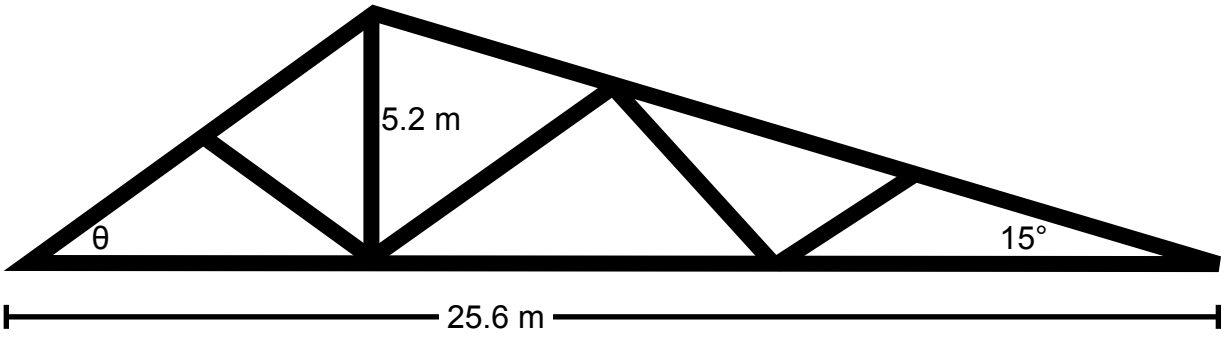
Ⓐ 112 feet

Ⓑ 129 feet

Ⓒ 211 feet

Ⓓ 275 feet

17) Valley Truss & Metal Ltd. have been contracted to build a Dual Pitch truss for an asymmetrical roofline. The design of the truss is given below. It has a horizontal span of 25.6 m, and a vertical height of 5.2 m. Determine the angle of inclination for the steeper part of the roof (θ). Round to the nearest degree.



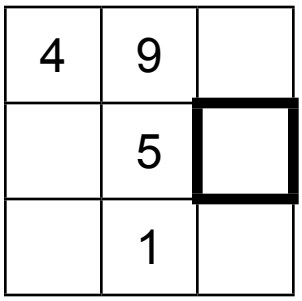
Ⓐ 22°

Ⓑ 40°

Ⓒ 43°

Ⓓ 50°

18) The sum of the numbers in each row, column and diagonal is the same. Find the number that should be in the indicated block.



Ⓐ 3

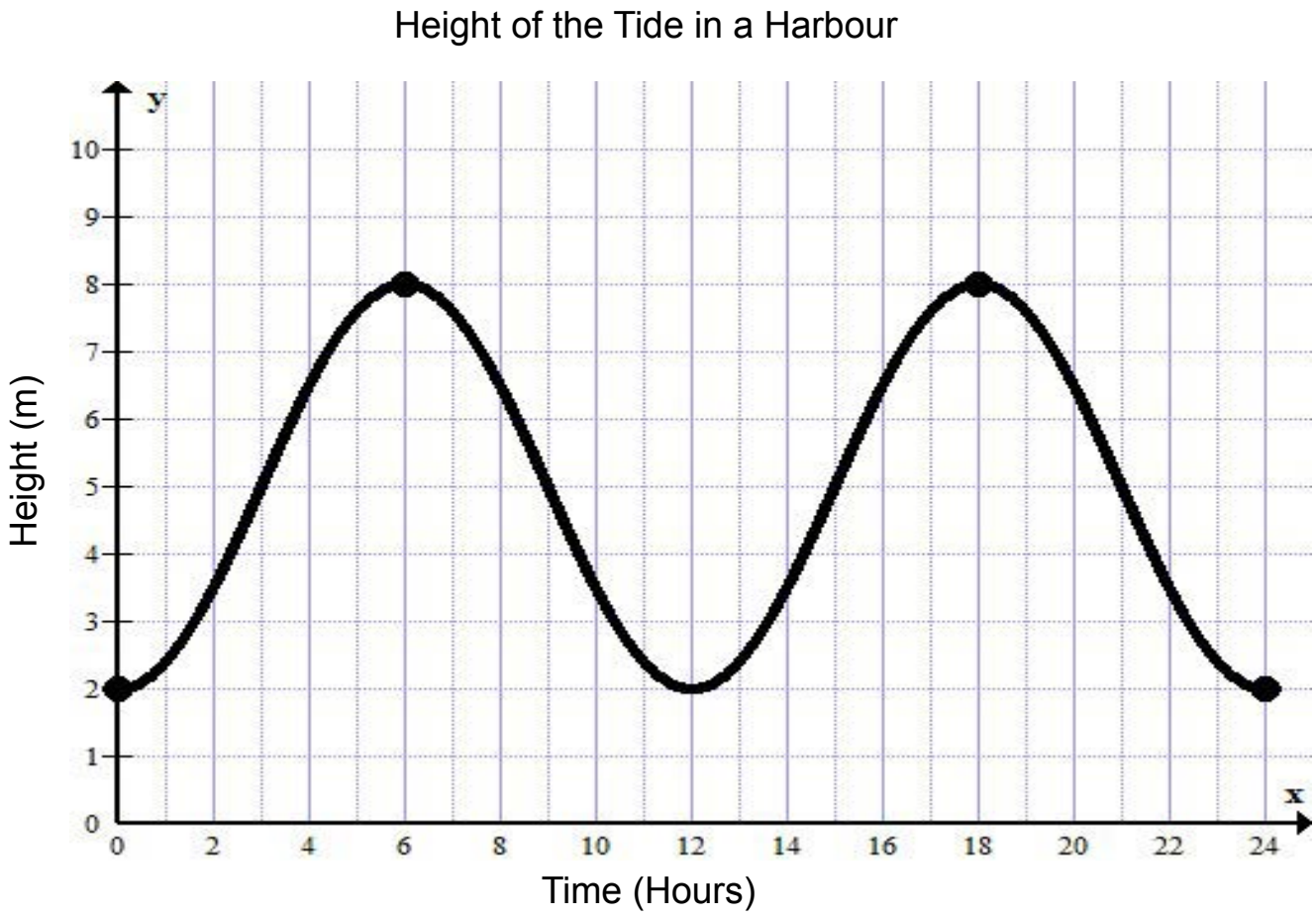
Ⓑ 6

Ⓒ 7

Ⓓ 8

Constructed Response

19) The graph below shows the hieght of the tide in a harbour during a 24 hour time period.



How high will the tide rise from low tide to high tide?

Answer: _____ metres

19.

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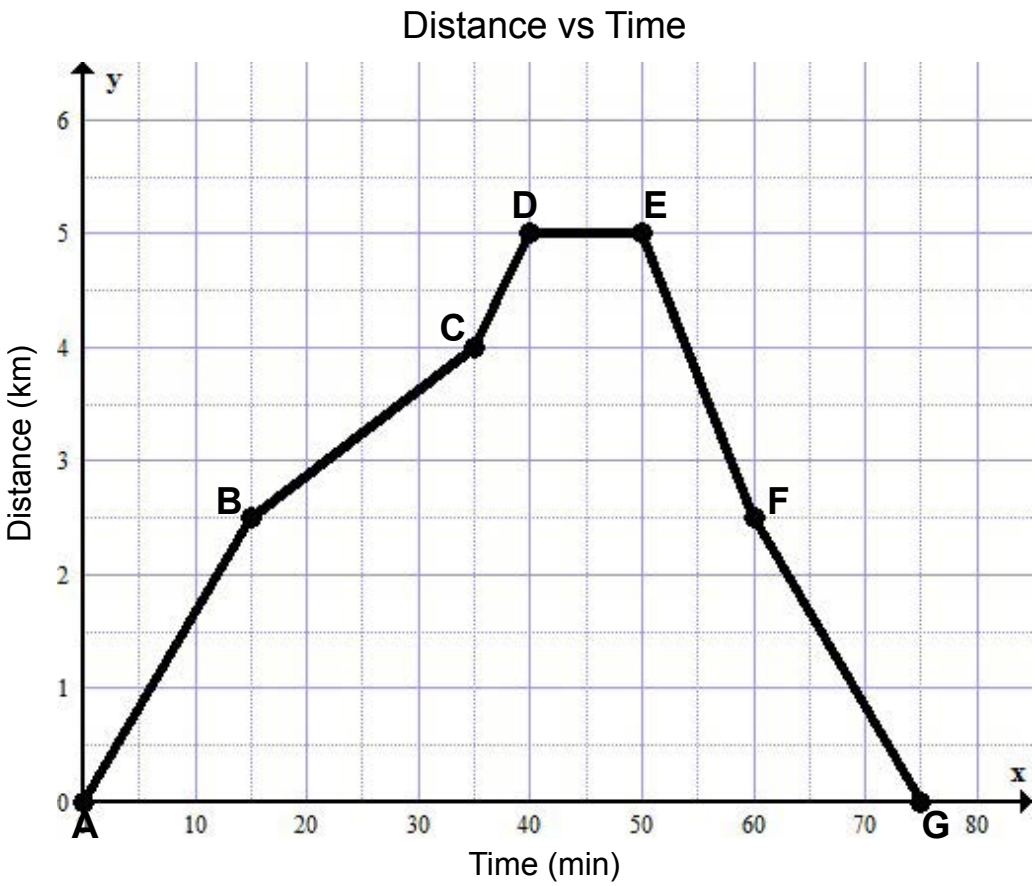
20) The graph shows how a cyclist travels over time. Over which interval is the cyclist travelling the fastest?



Answer: _____

20.

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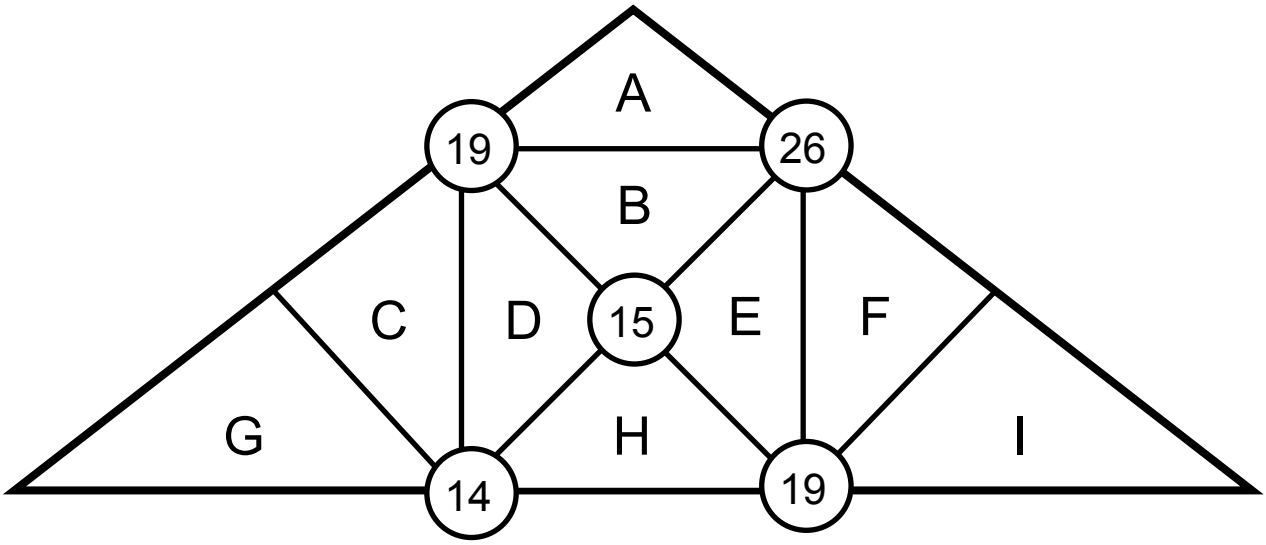
21) A tree is supported by a guy wire. The wire is anchored to the ground 7.0 m from the base of the tree. The angle of inclination of the wire is 65°. Calculate the length of the wire to the nearest tenth of a metre.

Answer: _____ metres

21. For Department Use Only

22) Each triangle, lettered A through I, has its own number value from 1 to 9. No two triangles have the same value. Each number shown in the diagram is the sum of the triangles that meet at that corner. For example, 19 is the sum of the triangles A, B, C, and D. If triangle D is 4 and triangle G is 7, determine the value of triangle I.



Answer: _____

22. For Department Use Only

Tear-out Page

Math at Work 11 Formula Sheet

Surface Area of a Rectangular Prism	$SA = 2lw + 2lh + 2wh$
Surface Area of a Triangular Prism	$SA = lw + wh + 2ls$
Surface Area of a Square-Based Pyramid	$SA = l^2 + 2ls$
Surface Area of a Cylinder	$SA = 2\pi r^2 + 2\pi rh$
Surface Area of a Cone	$SA = \pi r^2 + \pi rs$
Surface Area of a Sphere	$SA = 4\pi r^2$
Volume of a Rectangular Prism	$V = lwh$
Volume of a Triangular Prism	$V = \frac{1}{2}lwh$
Volume of a Square-Based Pyramid	$V = \frac{1}{3}b^2h$
Volume of a Cylinder	$V = \pi r^2 h$
Volume of a Cone	$V = \frac{1}{3}\pi r^2 h$
Volume of a Sphere	$V = \frac{4}{3}\pi r^3$
Slope	$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$
Simple Interest	$I = Prt$
Compound Interest	$A = P(1+i)^n$
Perimeter of a Rectangle	$P = 2l + 2w$ or $P = 2(l + w)$
Circumference of a Circle	$C = 2\pi r$ or $C = \pi d$
Area of a Rectangle	$A = lw$
Area of a Triangle	$A = \frac{bh}{2}$
Area of a Circle	$A = \pi r^2$
Pythagorean Theorem	$c^2 = a^2 + b^2$
Sine of Angle A	$\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$
Cosine of Angle A	$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}$
Tangent of Angle A	$\tan A = \frac{\text{opposite}}{\text{adjacent}}$

Fold and tear along perforation.