



Please note that the 2007/08 exams for this course will follow the content and the format of the Sample Examination for 2007/08. The following exam is for reference only and is not necessarily representative of the exams for the 2007/08 school year.

Applications of Mathematics 10

Sample Exam B

(Updated November 2006)

DO NOT OPEN ANY EXAMINATION MATERIALS UNTIL INSTRUCTED TO DO SO.

Examination Instructions

1. On your Answer Sheet, fill in the bubble (Form A, B, C, D, E, F, G or H) that corresponds to the letter on this Examination Booklet.
2. Use a pencil to fill in bubbles when answering questions on your Answer Sheet.
3. When answering **Numerical-Response** questions on your Answer Sheet:

- print digits as illustrated:



- shade the bubble with the negative symbol if the answer is negative; shade or leave blank the bubble with the positive symbol if the answer is positive.
- write your answer in the spaces provided using one digit per box, noting proper place value.
- leave unused boxes blank. For example, the answer -70.6 will be written as shown:



4. When using your calculator:
 - use the programmed value of π rather than the approximation of 3.14.
 - rounding should occur only in the final step of the solution.
5. Diagrams are not necessarily drawn to scale.
6. When the examination begins, remove the data pages located in the centre of this booklet.
7. Read the Examination Rules on the back of this booklet.

Use the following information to answer questions 1 and 2.

The table below represents items bought in BC.

Item	Price (\$)	Discount (%)	Discount (\$)	Discount Price (\$)	6% GST (\$)	7% PST (\$)	Total Price (\$)
Television	550.00	10					
Computer	600.00	25					

1. What is the Discount Price for the television?

- A. \$55.00
- B. \$495.00
- C. \$540.00
- D. \$605.00

2. What is the Total Price for the computer?

- A. \$169.50
- B. \$508.50
- C. \$649.75
- D. \$847.50

Use the following information to answer questions 3 and 4.

Heidi has a \$5000 loan. The spreadsheet below illustrates the partial repayment of the loan.

	A	B	C	D	E	F
1	Year	Opening Balance (\$)	Interest Rate (%)	Interest Charged (\$)	Annual Payment (\$)	Closing Balance (\$)
2	2003	5000.00	3	150.00	1150.00	4000.00
3	2004	4000.00	3	120.00	1150.00	2970.00
4	2005	2970.00	3	89.10	1150.00	1909.10
5	2006	1909.10	3	57.27	1150.00	816.37

3. Which formula calculates the Closing Balance in Year 2006?

- A. = B5 + D5 – E5
- B. = B5 + D5 + E5
- C. = B5 – C5/100 * B5 – E5
- D. = B5 + C5/100 * B5 + E5

4. If the Interest Rate is increased in 2004, which of the following cell values **does not** change?

- A. B3
- B. D3
- C. B4
- D. D4

5. At a factory, bunk beds are constructed using 3 wood packages and 2 hardware packages. Currently, the factory has the following inventory:

Wood Packages	Hardware Packages
141	94

What is the maximum number of complete bunk beds that can be constructed using the inventory?

Record your answer neatly on the Answer Sheet.

6. How much longer is the route from Edmonton to Halifax through Toronto than the route from Edmonton to Halifax through Ottawa?

Departure City	Destination City	Distance (km)
Edmonton	Ottawa	2848
	Regina	698
	Saskatoon	484
	Toronto	2687

Departure City	Destination City	Distance (km)
Toronto	Halifax	1287
	Montreal	508
	Ottawa	363
	Regina	2026

Departure City	Destination City	Distance (km)
Ottawa	Edmonton	2848
	Halifax	958
	Montreal	151
	Toronto	363

- A. under 100 km
- B. 100 – 200 km
- C. 200 – 300 km
- D. over 300 km

7. Kyle made a spreadsheet to track his loan.

	A	B	C	D	E	F	G
1	Year	Opening Balance (\$)	Interest Rate (%)	Interest Charged (\$)	Annual Payment (\$)	Extra Payment (\$)	Closing Balance (\$)
2	1	25 000.00	9	2 250.00	3 895.50	0	23 354.50
3	2	23 354.50	9	2 101.91	3 895.50	0	21 560.91
4	3	21 560.91	9	1 940.48	3 895.50	0	19 605.89
5	4	19 605.89	9	1 764.53	3 895.50	10 000.00	7 474.92
6	5	7 474.92	9	672.74	3 895.50	0	4 245.16
7	6	4 245.16	9	382.69	3 895.50	0	739.35

In which year is an extra payment made?

- A. Year 3
- B. Year 4
- C. Year 5
- D. Year 6

8. The following table represents a \$1000 investment.

Year	Opening Balance (\$)	Interest Rate (%)	Interest Payment (\$)	Closing Balance (\$)
1	1000.00	8.5	85.00	1085.00
2	1085.00	8.5	92.23	

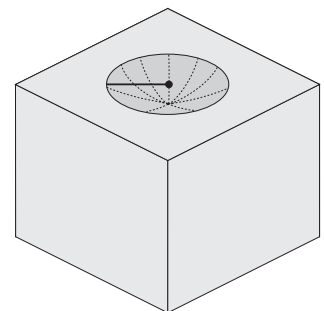
If the opening balance in Year 1 is doubled, what is the new interest payment in Year 2?

- A. \$170.00
 B. \$177.23
 C. \$184.45
 D. \$262.23
9. The following table represents an investment.

Year	Opening Balance (\$)	Interest Rate (%)	Interest Payment (\$)	Closing Balance (\$)
2001		4.00		
2002		5.00	50.00	1050.00

What was the opening balance of the bond in 2001?

- A. \$910.00
 B. \$952.38
 C. \$961.54
 D. \$1000.00
10. A birdbath is constructed from a concrete cube as shown.
 The bath is a hemisphere.
- How would you calculate the volume of concrete contained in the birdbath?
- A. Add the volume of the cube and the volume of the sphere.
 B. Add the volume of the cube and half the volume of the sphere.
 C. Subtract the volume of the sphere from the volume of the cube.
 D. Subtract half the volume of the sphere from the volume of the cube.



11. What is the volume of a lacrosse ball with a radius of 4.8 cm?

Answer to the nearest whole number.

Record your answer neatly on the Answer Sheet.

Use the following table to answer question 12.

2002 Winter Olympics Medal Table

Rank	Nation	Gold	Silver	Bronze	Total Medals
1	Germany (GER)	12	16	7	35
2	Norway (NOR)	11	7	6	24
3	United States (USA)	10	13	11	34
4	Canada (CAN)	6	4	7	17
5	Russian Federation (RUS)	6	4	5	15

12. Which of the following statements is **incorrect** about the 2002 Winter Olympics Medal Table?

- A. Norway won 24 medals.
 - B. USA won the most bronze medals.
 - C. Canada and Russia won the same number of gold and silver medals.
 - D. Medal standings are ranked according to the total number of medals won.
-

13. What is the difference in points between Chelsea and Liverpool?

English Premier League Soccer Standings

Rank	Team	GP	W	L	T
1	Arsenal	38	26	0	12
2	Chelsea	38	24	7	7
3	Manchester United	38	23	9	6
4	Liverpool	38	16	10	12
5	Newcastle United	38	13	8	17

Legend
GP – Number of games played
W – Number of games won (3 points per win)
L – Number of games lost (0 points per loss)
T – Number of games tied (1 point per tie)

- A. 8
- B. 11
- C. 19
- D. 21

14. The volume of a sphere is 45 cm^3 . What is the surface area of this sphere?
- A. 28.39 cm^2
 - B. 61.18 cm^2
 - C. 89.79 cm^2
 - D. 135.00 cm^2

Use the following tables to answer question 15.

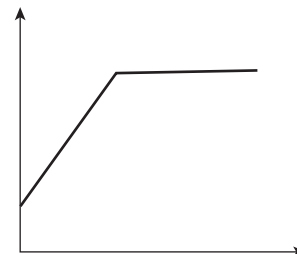
A monthly budget in Canadian dollars				
Housing	Food	Transportation	Utilities	Entertainment
\$850	\$320	\$460	\$150	\$250

Exchange rates for \$1 Canadian				
	US (\$)	AUS (\$)	EUR (€)	GBP (£)
\$1 CAD	0.7279	1.1028	0.6442	0.4482

15. What would be the cost of entertainment in British pounds [GBP (£)]?
- A. 112.05
 - B. 161.05
 - C. 250.00
 - D. 557.79
-

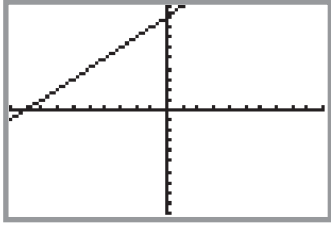
16. Which of the following scenarios best describes the graph?

- A. The height of a kicked football over time.
- B. The height of a rock dropped off a bridge.
- C. The height of a person over their lifetime.
- D. The height of a child jumping on a trampoline.

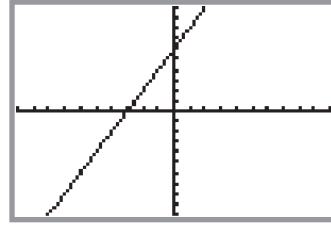


17. Which of the following graphs represents the equation $y = (x + 3)^2$?

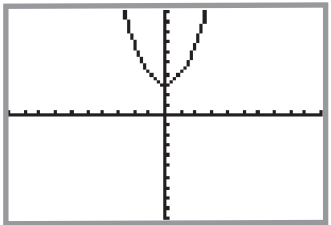
A.



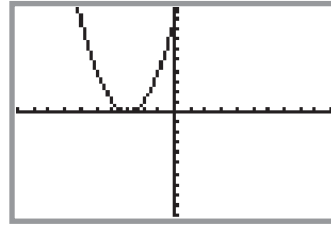
B.



C.



D.



18. The equation representing the path of an emergency flare is $h = 28.6t - 4.9t^2$, where h is height in the air in metres and t is time in seconds. Which window settings would be most appropriate for this situation?

A. $x \text{ min} = -10$ $y \text{ min} = -10$

$x \text{ max} = 10$ $y \text{ max} = 10$

B. $x \text{ min} = -10$ $y \text{ min} = -776$

$x \text{ max} = 10$ $y \text{ max} = 42$

C. $x \text{ min} = 0$ $y \text{ min} = 0$

$x \text{ max} = 6$ $y \text{ max} = 45$

D. $x \text{ min} = 0$ $y \text{ min} = -45$

$x \text{ max} = 10$ $y \text{ max} = 45$

19. The monthly cost, C , in dollars, of using a cell phone is calculated using the function $C(t) = 0.09t + 20$ where t is the time in minutes. What is $C(145)$? Answer in dollars and cents.

Record your answer neatly on the Answer Sheet.

20. To rent a car at XYZ Car Rentals a customer pays a flat fee of 15 dollars plus 25 cents for each kilometre driven. Which of the following represents the total charged by XYZ Car Rentals where d represents distance travelled in kilometres and C represents total charged in dollars?

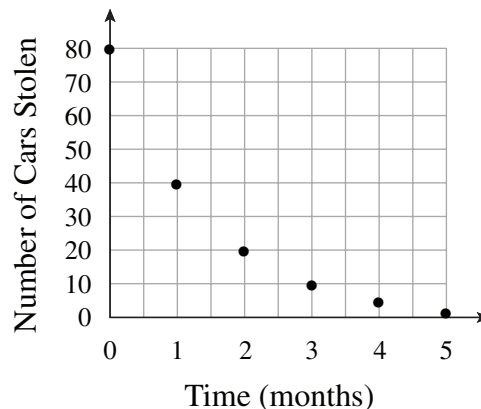
I.	<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">d</th> <th style="padding: 5px;">C</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">0</td> <td style="text-align: center; padding: 5px;">15</td> </tr> <tr> <td style="text-align: center; padding: 5px;">20</td> <td style="text-align: center; padding: 5px;">20</td> </tr> <tr> <td style="text-align: center; padding: 5px;">80</td> <td style="text-align: center; padding: 5px;">80</td> </tr> </tbody> </table>	d	C	0	15	20	20	80	80
d	C								
0	15								
20	20								
80	80								
II.	$C = 0.25d + 15$								
III.									

- A. II only
 B. III only
 C. II and III only
 D. I, II and III

21. The effectiveness of an anti-car theft program is measured each month. The graph represents the number of cars stolen over a period of 5 months.

What is the range of the graph?

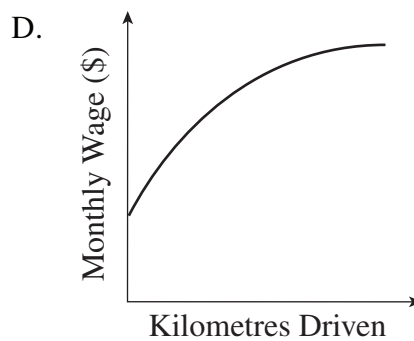
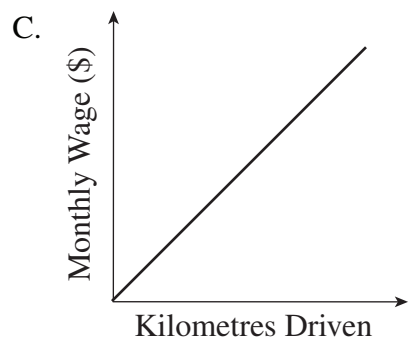
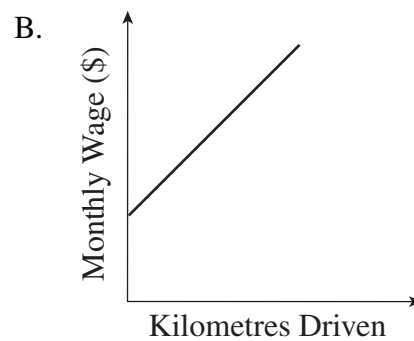
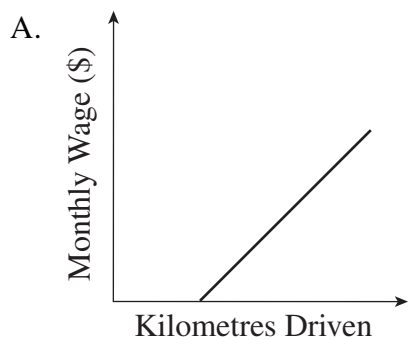
- A. $\{0 \text{ to } 5\}$
 B. $\{2 \text{ to } 80\}$
 C. $\{0, 1, 2, 3, 4, 5\}$
 D. $\{2, 5, 10, 20, 40, 80\}$



22. The fine for speeding, F , in dollars, depends on the speed, s , in kilometres per hour, **over** the posted speed limit. This can be expressed by the equation $F(s) = 120 + 5s$. If Tim paid a \$330 fine after he was caught speeding in an 80 km/h speed zone, how fast was he driving?

- A. less than 90 km/h
- B. between 90 and 110 km/h
- C. between 110 and 130 km/h
- D. over 130 km/h

23. A truck driver earns 350 dollars per month plus 45 cents per kilometre driven. Which graph would best represent the monthly wage earned by the truck driver?



Use the following tables to answer questions 24 and 25.

The volume of water, V , in litres, in a tank as it is being emptied depends on the time, t , in minutes, and can be expressed by the function $V = 80 - 4t$.

24. What is the rate at which the water is draining from the tank?
- A. 4 L/min
 - B. 20 L/min
 - C. 76 L/min
 - D. 80 L/min
25. How long will it take until the tank is half-empty?
- A. 10 min
 - B. 20 min
 - C. 40 min
 - D. 80 min
-
26. Manjot is 10 km from home. He walks towards home at a constant speed of 2.5 km/h. Which equation best describes his distance from home?
- A. $d = 2.5t + 10$
 - B. $d = 2.5t - 10$
 - C. $d = 10 + 2.5t$
 - D. $d = 10 - 2.5t$
27. The world population, P , in billions of people, can be expressed by the function $P(t) = 6(1.005)^t$ where t is time in years from today. What will the predicted world population be in 18 years, in billions of people? Answer to two decimal places.
- Record your answer neatly on the Answer Sheet.**
28. The total cost, C , in dollars, of holding a birthday party at a roller skating rink is represented by the function $C(n) = 35 + 15n$ where n is the number of people attending the party. In this function, what does 35 represent?
- A. initial fee for roller skating rink
 - B. admission charge per person
 - C. food charge per person
 - D. total cost of party

29. The table represents the monthly salary of a boat salesperson.

Number of Boats Sold	Monthly Salary
0	450
2	700
4	950
6	1200

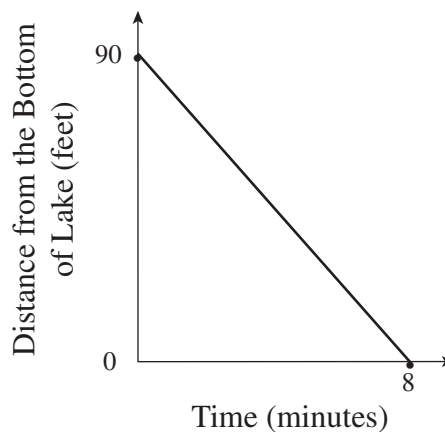
How much does the salesperson make for each boat sold?

- A. \$125
- B. \$250
- C. \$350
- D. \$450

30. The graph represents the distance a diver is from the bottom of the lake over time.

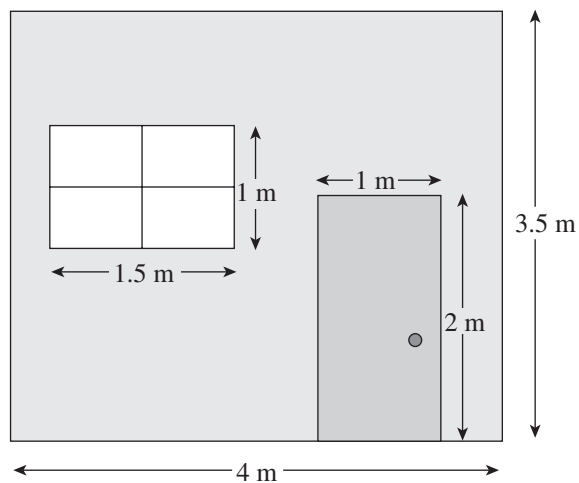
How far from the bottom of the lake is the scuba diver at 3 min?

- A. 60.00 feet
- B. 56.25 feet
- C. 33.75 feet
- D. 7.73 feet



31. The diagram shows the wall of a room. What is the area of the wall (not including the door and the window)?

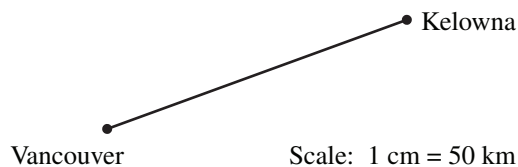
- A. 8.5 m^2
- B. 10.5 m^2
- C. 14.0 m^2
- D. 17.5 m^2



32. What is the amount of material needed to cover a soccer ball with a diameter of 10 cm?
- A. 314 cm^2
 - B. 524 cm^2
 - C. 1257 cm^2
 - D. 4189 cm^2

33. What is the radius of a volleyball with a volume of 4849.0 cm^3 ?
- A. 34.0 cm
 - B. 16.9 cm
 - C. 12.7 cm
 - D. 10.5 cm

34. On a map of BC, the straight-line distance from Vancouver to Kelowna measures 4.2 cm.



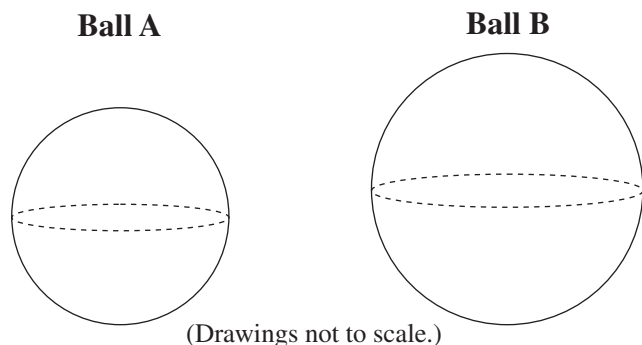
What is the **actual** distance, in kilometres, from Vancouver to Kelowna in a straight line?
 Answer to the nearest kilometre.

Record your answer neatly on the Answer Sheet.

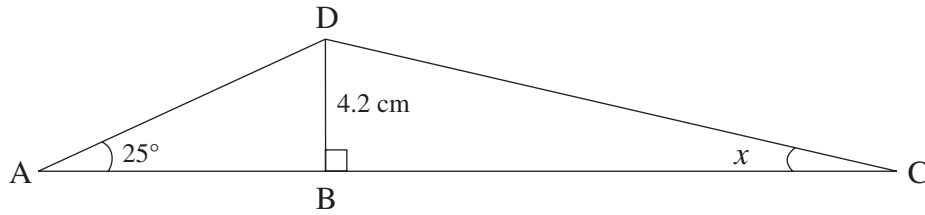
35. Ball A has a surface area of 12.57 cm^2 .
 The surface area of Ball B is four times the surface area of Ball A.

What is the radius of Ball B?

- A. 2 cm
- B. 4 cm
- C. 8 cm
- D. 16 cm

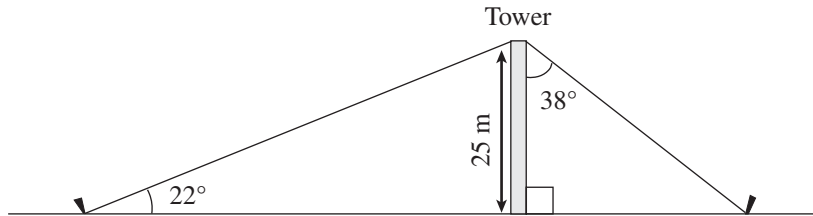


36. CB is twice the length of AB. The length of DB is 4.2 cm.



What is the measure of $\angle x$?

- A. 12.5°
 - B. 13.1°
 - C. 25.0°
 - D. 47.0°
37. Two guy wires support a tower of 25 m high.



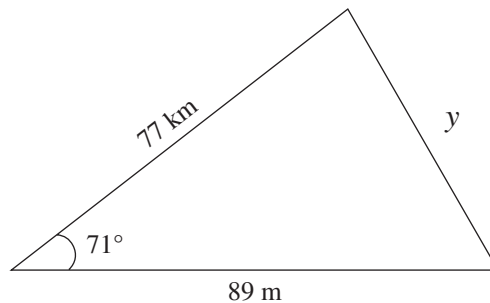
What is the total length of the two guy wires?

- A. 31.73 m
 - B. 66.74 m
 - C. 98.46 m
 - D. 107.34 m
38. What value(s) of A will give $\sin A = 0.3907$, where A is between 0° and 180° ?

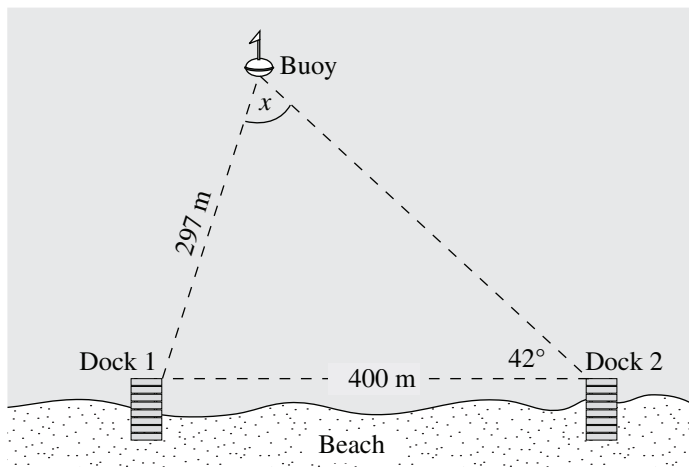
- A. 23°
- B. 157°
- C. 23° and 157°
- D. 67° and 113°

39. Which method should be used to find side y ?

- A. Sine Law
- B. Cosine Law
- C. Tangent Law
- D. Pythagorean Theorem



40. Two docks are located 400 m apart on a lake. A buoy is located 297 m from Dock 1 and the angle at Dock 2 is 42° .

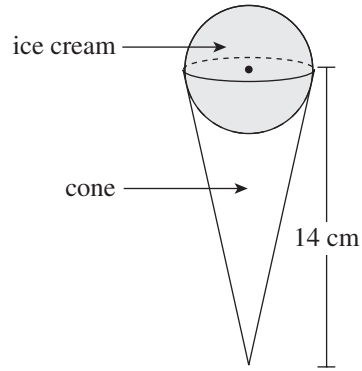


What is the angle at the buoy, x , in degrees? Answer to two decimal places.

Record your answer neatly on the Answer Sheet.

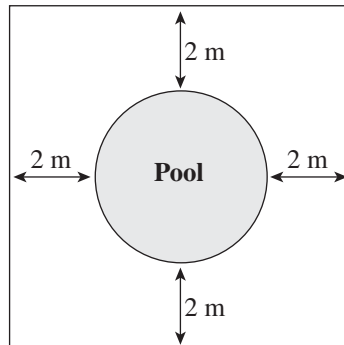
41. If the dimensions of a cube are doubled, by what factor does the volume of the cube increase?
- A. 8
 - B. 6
 - C. 3
 - D. 2
42. Which of the following instruments would **best** measure the length of a football field?
- A. metre stick
 - B. micrometer
 - C. 3-m tape measure
 - D. trundle wheel
43. Using a ruler, the distance from Vancouver to Vernon on a map measures 4.4 cm. What is the precision of the ruler?
- A. 0.01 cm
 - B. 0.05 cm
 - C. 0.1 cm
 - D. 0.5 cm

Use the following diagram to answer question 44.



44. The volume of an empty ice-cream cone with a height of 14 cm is 234.6 cm^3 .
What is the volume of the spherical scoop of ice cream in the diagram?
- A. 10 cm^3
B. 201 cm^3
C. 235 cm^3
D. 268 cm^3
-

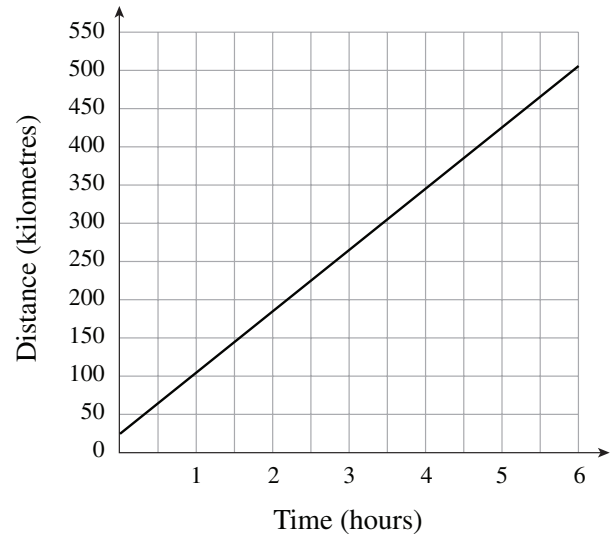
45. A square fence is to be built so that it is 2 m from the outside edge of a circular pool.
- If the circumference of the pool is 70 m, what is the perimeter of the fence?



- A. 54 m
B. 78 m
C. 105 m
D. 296 m

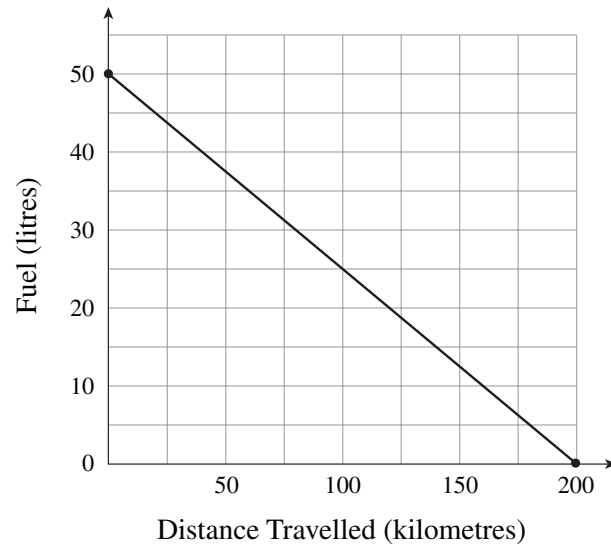
46. After 2 h a car is 185 km from Vancouver.
After 5 h the car is 425 km from Vancouver.
What is the equation that represents this situation as graphed?

- A. $D = 80t$
- B. $D = 80t + 25$
- C. $D = 0.8t + 25$
- D. $D = 0.0125t - 0.3125$



47. What is the equation of the line for this graph?

- A. $F = -0.25d + 50$
- B. $F = 0.25d + 50$
- C. $d = 4F + 50$
- D. $F = -4d + 50$

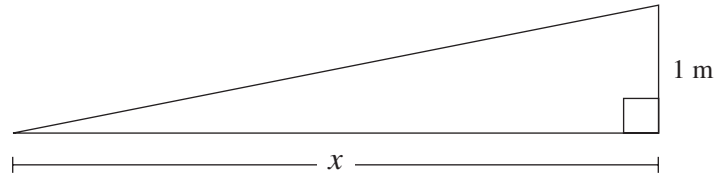


48. A line passes through the points A(-14, 30) and B(6, -10). What is the slope of this line?
Answer to the nearest whole number.

Record your answer neatly on the Answer Sheet.

49. The slope of the ramp is $\frac{2}{9}$.

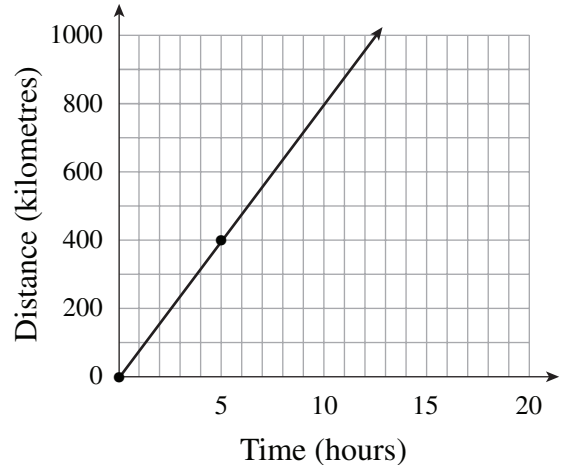
If the height of the ramp is 1 m, how long is the base x ?



- A. 0.22 m
- B. 4.5 m
- C. 4.61 m
- D. 18 m

50. The graph shows the distance travelled over time.

Using the graph, how long will it take to travel 1240 km?



- A. 14.5 h
- B. 15.0 h
- C. 15.5 h
- D. 20.5 h

51. Given the following points on a quadrilateral $A(-2, -1)$, $B(7, 5)$, $C(6, 0)$, $D(0, -4)$. Which of the following statements is true?

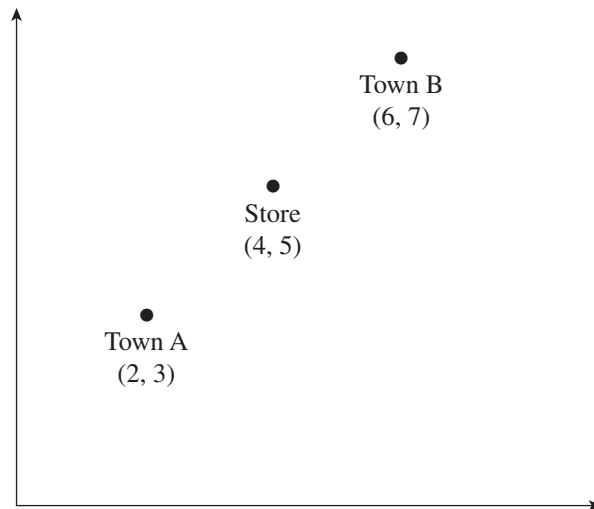
I.	AB is parallel to CD.
II.	AB is perpendicular to CD.
III.	AD is perpendicular to AB.

- A. I only
- B. III only
- C. I and III only
- D. II and III only

52. Susan walks 110 m east, then 45 m north to locate a survey marker. Jerry walks 25 m west, then 130 m south to locate a different marker. If they started from the same spot, what is the shortest distance between the two markers?

- A. 219 m
- B. 221 m
- C. 250 m
- D. 251 m

Use the following graph to answer questions 53 and 54.



53. What does the location of the store represent?

- A. slope of AB
- B. midpoint of AB
- C. y-intercept of AB
- D. distance between AB

54. What is the straight-line distance between Town A and Town B?

- A. 1.4
 - B. 2.8
 - C. 5.7
 - D. 32
-

55. A line segment has an endpoint at $(-2, 16)$ and the midpoint at $(3, 6)$. What are the coordinates of the other endpoint?

- A. $(8, -4)$
- B. $(-0.5, 11)$
- C. $(11, -7)$
- D. $(13, 1)$

56. The table below represents the stopping distance of a ship when travelling at various speeds.

Speed (km/h)	Stopping Distance (km)
9	1.4
16	3.2
24	4.9
28	5.8
30	6.1

Using linear regression, what is the speed of the ship if the stopping distance is 3.95 km?

- A. under 17 km/h
- B. 17–19 km/h
- C. 19–21 km/h
- D. over 21 km/h

57. The table below shows how the arm span of students depends on their heights.

Height (m)	Arm Span (m)
1.50	1.47
1.56	1.56
1.64	1.67
1.61	1.60
1.59	1.77

Using linear regression, what is the slope of the line of best fit? Answer to one decimal place.

Record your answer neatly on the Answer Sheet.

58. A survey is conducted to determine how long people have lived in their homes. The city is divided into eight areas. If all people in one area are surveyed, what type of sampling method is used?
- A. cluster
 - B. systematic
 - C. simple random
 - D. stratified random

59. The table below shows the number of snowboarders in BC and the number of snowboarding injuries in BC.

Year	2000	2004
Number of Snowboarders in BC	4 000	10 000
Number of Snowboarding Injuries in BC	800	1 900

According to the data from the table above, which of the following statements are true?

I.	Snowboarding was safer in 2000 than in 2004.
II.	The number of people injured has increased faster than the increase in the number of people snowboarding.

- A. I only
B. II only
C. I and II
D. neither
60. The following table represents the height in inches of seven brothers and seven sisters.

Brothers	71	68	66	67	70	71	70
Sisters	69	64	65	63	65	62	65

What is the correlation coefficient for the height of the brothers versus the height of their sisters?

- A. 0.07
B. 0.24
C. 0.26
D. 0.29

END OF EXAMINATION