

Applications of Mathematics 10

2008/09 Released Exam

October 2008

Form A

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.

You have **Examination Booklet Form A**. In the box above #1 on your **Answer Sheet**, fill in the bubble as follows.

Exam Booklet Form/ Cahier d'examen	A	B	C	D	E	F	G	H
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1. A warehouse records inventory using a table.

Week	Beginning of Week Inventory	Items Moved In	Items Moved Out	End of Week Inventory
1	12 000	300	523	11 777
2	11 777	650	2 263	10 164
3	10 164	200	1 856	8 508

Which of the following could be used to determine the End of Week Inventory for any week?

- A. Beginning of Week Inventory + Items Moved In – Items Moved Out
- B. Beginning of Week Inventory + Items Moved In + Items Moved Out
- C. Beginning of Week Inventory – Items Moved In + Items Moved Out
- D. Beginning of Week Inventory – Items Moved In – Items Moved Out

Use the following information to answer questions 2 and 3.

An electrical company records the number of repairs it did in September.

Type of Repair	Cost per Repair	Number Completed
Outlet Replacement	\$35.50	100
Home Rewiring	\$600.00	45
Fixture Installation	\$225.50	200

2. How much did the electrical company collect from these repairs?
- A. \$345.00
 - B. \$861.00
 - C. \$3 550.00
 - D. \$75 650.00
3. If the electrical company makes a profit of 45% on the cost of each repair, how much profit did it make from the **total** amount of **fixture installations**?
- A. \$20 295.00
 - B. \$34 042.50
 - C. \$45 100.00
 - D. \$75 650.00

4. In Kelowna, the gasoline price per litre can be calculated using the following chart.

Item	Charges in Kelowna
Base Price	73.5¢/L
Federal Excise Tax	10¢/L
Provincial Tax	14.5¢/L
Subtotal	

An additional 7% tax is charged on the subtotal. What is the total price per litre of gasoline in Kelowna?

- A. 98.0¢/L
- B. 103.1¢/L
- C. 104.9¢/L
- D. 166.6¢/L

5. The following table lists cheques Sally wrote.

Date	Cheque Recipient	Amount of Cheque (\$)
June 3	XYZ Hair Salon	55.43
June 11	Below Cost Foods	124.32
June 19	Woody the Carpenter	456.87
June 25	Ralph's Meats	

If the cheques Sally wrote in June totalled \$725.67, what was the amount of the cheque to Ralph's Meats? Answer in dollars and cents.

Record your answer neatly on the Answer Sheet.

Use the following table to answer questions 6 and 7.

The following table represents 3 years of the repayment of a loan.
The Interest Rate and the Annual Payment remain the same each year.

Year	Opening Balance (\$)	Interest Rate (%)	Interest Charged (\$)	Annual Payment (\$)	Closing Balance (\$)
1		9	450.00	1285.46	
2	4164.54	9	374.81	1285.46	3253.89
3	3253.89	9	292.85	1285.46	2261.28

6. What was the Opening Balance of the loan in Year 1?
- A. \$2879.08
 - B. \$4164.54
 - C. \$5000.00
 - D. \$5450.00
7. If the table is extended to include Year 4 with the same Annual Payment, what would be the Closing Balance in that year?
- A. \$772.30
 - B. \$1179.34
 - C. \$1285.46
 - D. \$3750.26

8. The following table represents a teacher’s mark book. Each assignment is worth 100 marks.

Student Name	Assignment #1	Assignment #2	Assignment #3	Overall Grade
Jean-Luc P.	85	79	93	86%
Kenny G.	62	59	59	60%
Martha S.	89	72	88	83%
Class Average				76%

If Kenny G. earns another 10 marks for Assignment #2, what will be the new Class Average?

- A. 63%
- B. 76%
- C. 77%
- D. 80%

9. Stephen creates a spreadsheet to represent his car’s depreciation (decrease in value) each year.

	A	B	C	D	E
1	Year	Car’s Value at Start of Year (\$)	Rate of Depreciation (%)	Depreciation Amount (\$)	Car’s Value at End of Year (\$)
2	1	34 500.00	15.0	5 175.00	29 325.00
3	2	29 325.00	10.0	2 932.50	26 392.50
4	3	26 392.50	10.0	2 639.25	23 753.25

If the depreciation rate in Year 5 is 12%, which spreadsheet formula would determine the value of the car at the end of that year?

- A. = B6 + C6
- B. = B6 – C6
- C. = B6 + D6
- D. = B6 – D6

10. The following spreadsheet represents the monthly sales for a clothing store.

	A	B	C	D	E	F
1	Month	Opening Bank Balance (\$)	Amount of Sales (\$)	Amount of Returns (\$)	Employee Pay (\$)	Closing Bank Balance (\$)
2	1	79 562.00	56 520.95	12 350.72	5 656.52	118 075.71
3	2	118 075.71	49 562.30	5 263.02	5 750.25	156 624.74
4	3	156 624.74	35 025.36	15 652.30	5 520.30	170 477.50
5	4	170 477.50	56 023.22	26 524.32	8 096.50	191 879.90

If every employee is given a 20% raise in Month 4, what would be the store's new Closing Bank Balance?

- A. \$131 262.80
- B. \$190 260.60
- C. \$193 499.20
- D. \$206 453.60

11. The following table represents the repayment of a loan.

	A	B	C	D	E	F
1	Year	Opening Balance (\$)	Interest Rate (%)	Interest Charged (\$)	Annual Payment (\$)	Closing Balance (\$)
2	1	8000.00	8	640.00	2003.65	6636.35
3	2	6636.35	8	530.91	2003.65	5163.61
4	3	5163.61	8	413.09	2003.65	3573.05
5	4	3573.05	8	285.84	2003.65	1855.24
6	5		8		2003.65	

What is the value of cell D6? Answer in dollars and cents.

Record your answer neatly on the Answer Sheet.

12. The following spreadsheet represents the growth of an investment.

	A	B	C	D	E	F
1	Year	Opening Balance (\$)	Interest Rate (%)	Interest Earned (\$)	Annual Investment (\$)	Closing Balance (\$)
2	2002	1500.00	3.5	52.50	200.00	1752.50
3	2003	1752.50	3.5	61.34	200.00	2013.84
4	2004	2013.84	3.5	70.48	150.00	2234.32
5	2005	2234.32	3.5	78.20	100.00	2412.52

If the Annual Investment in 2005 is changed to \$200.00, which cells would change?

- A. E5
- B. E5 and F5
- C. D5, E5, and F5
- D. B5, D5, E5, and F5

13. The following table represents the growth of an investment over a 4-year period.

Year	Opening Balance (\$)	Interest Rate (%)	Interest Earned (\$)	Closing Balance (\$)
1	1200.00	2.60		1231.20
2	1231.20	2.20		1258.29
3	1258.29	2.50		1289.75
4	1289.75	2.40		1320.70

In which year was the most interest earned?

- A. Year 4
- B. Year 3
- C. Year 2
- D. Year 1

14. A used clothing store discounts an item based on the amount of time it has been in the store. The following table represents the discount for each time period.

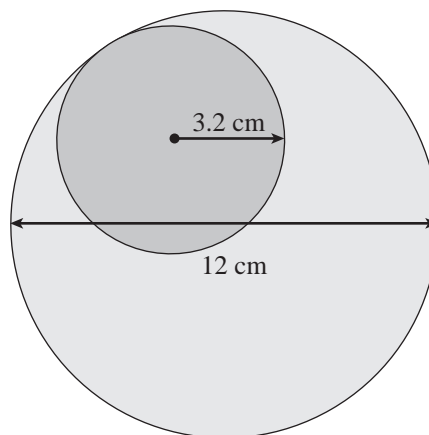
Number of Days in Store	Discount Taken Off of Original Price (%)
0 – 6 days	0
7 – 13 days	25
14 – 20 days	50

The following table lists several items in the store.

Item	Original Price (\$)	Number of Days in Store	Discounted Price (\$)
Jeans	35.00	8	
Sweater	26.75	14	
T-Shirt	15.00	6	

If Simon buys all three items, what would be the total amount of his purchase before taxes?

- A. \$37.13
 B. \$54.63
 C. \$57.56
 D. \$76.75
15. A plate is 12 cm in diameter. A circular cookie has a radius of 3.2 cm. What percentage of the plate's area does the cookie cover?



- A. 25.2%
 B. 26.7%
 C. 28.4%
 D. 53.3%

16. The table below represents the number of tickets sold and the profits for various events.

Number of Tickets Sold	Profit (\$)
1295	3240
800	2000
180	450
720	1800
350	875

In order to see all of the data on a calculator screen, which of the following window settings should be used?

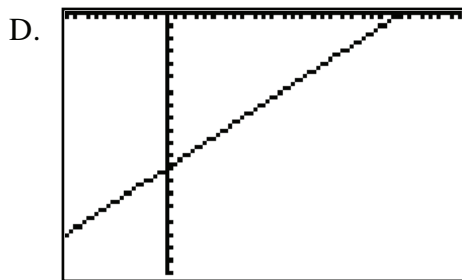
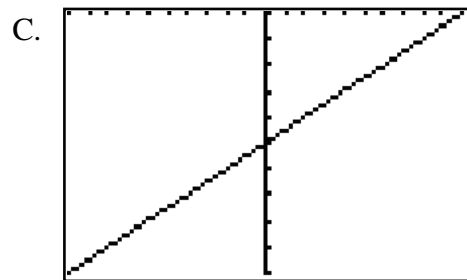
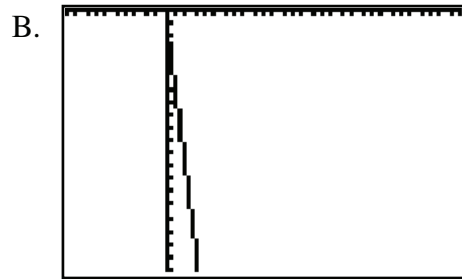
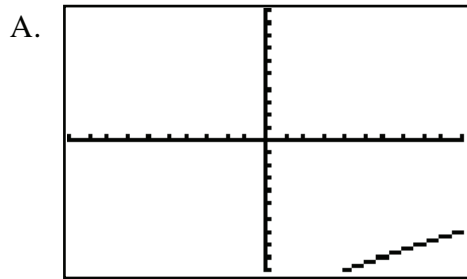
A. $x \text{ min} = 1300$
 $x \text{ max} = 300$
 $y \text{ min} = 3300$
 $y \text{ max} = 400$

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

C. $x \text{ min} = 0$
 $x \text{ max} = 3300$
 $y \text{ min} = 0$
 $y \text{ max} = 1300$

D. $x \text{ min} = 0$
 $x \text{ max} = 1300$
 $y \text{ min} = 0$
 $y \text{ max} = 3300$

17. Which of the following best represents the graph of the equation $y = 0.5x - 12$ on a graphing calculator for the values of x between -10 and 30 and values of y between -20 and 0 ?



18. Two salespeople, Holly and Garrett, are paid a monthly amount based on the sales they make.

Holly	Garret
\$1400 plus 10% commission on all sales, s	$P = 0.24s$ where P is the monthly pay based on the sales, s

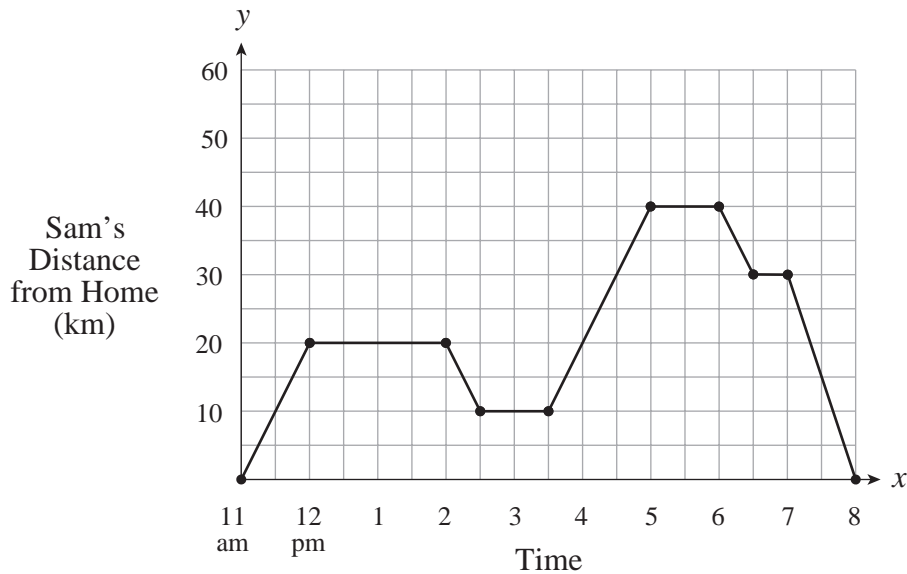
If Holly and Garrett each made \$10 000 worth of sales, which of the following statements is true about their monthly pay?

- A. Holly made between \$1 and \$499 more in pay than Garrett.
- B. Holly made between \$500 and \$999 more in pay than Garrett.
- C. Garrett made between \$1 and \$499 more in pay than Holly.
- D. Garrett made the same amount of pay as Holly.

19. The cost for hosting a dinner is given by the formula $C(n) = 60 + 3n$, where C is the total cost, in dollars, and n is the number of people attending the dinner. What is $C(80)$? Answer to the nearest dollar.

Record your answer neatly on the Answer Sheet.

20. The following graph represents Sam's trip.



When does Sam travel the fastest?

- A. 11:00 a.m. to 12:00 p.m.
 B. 2:00 p.m. to 2:30 p.m.
 C. 3:30 p.m. to 5:00 p.m.
 D. 7:00 p.m. to 8:00 p.m.
21. Peach City Cabs charges an initial fee and a rate per kilometre. The charge is represented by the function $C(d) = 1.20d + 1.40$ where C represents the cost, in dollars, and d represents the distance, in kilometres, travelled. If the cab company **increased** the rate per kilometre and **decreased** the initial fee, which function would model the new situation?
- A. $C(d) = 1.40d + 1.20$
 B. $C(d) = 1.00d + 1.20$
 C. $C(d) = 1.00d + 1.60$
 D. $C(d) = 1.40d + 1.60$

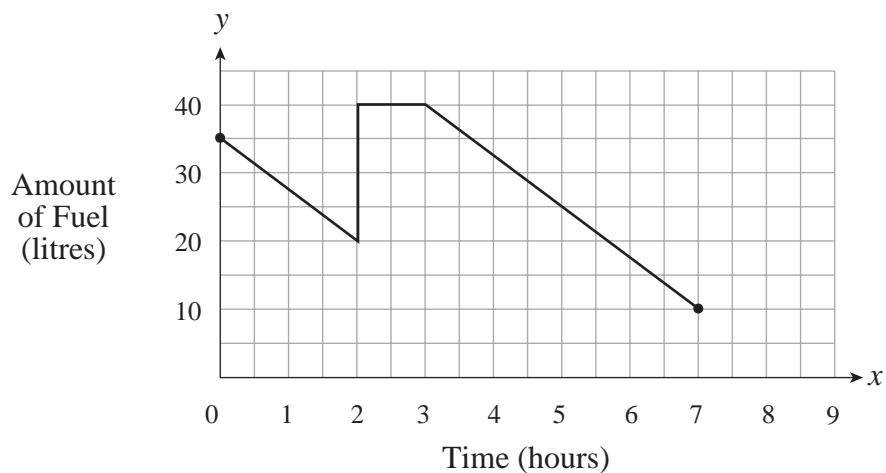
22. A consumer has a choice of two phone plans.

Plan A	$C(t) = 0.13t + 22.50$ where t is the time used, in minutes, and $C(t)$ is the total cost, in dollars.
Plan B	The cost per minute is 4¢ cheaper per minute, but the fixed cost is \$5.00 greater than Plan A.

If both plans are used for 55 min, how much cheaper is Plan A than Plan B?

- A. \$2.80
- B. \$7.20
- C. \$22.45
- D. \$29.65

23. The following graph represents the Amount of Fuel in a truck over Time.



What is the **range** of the relation in the graph above?

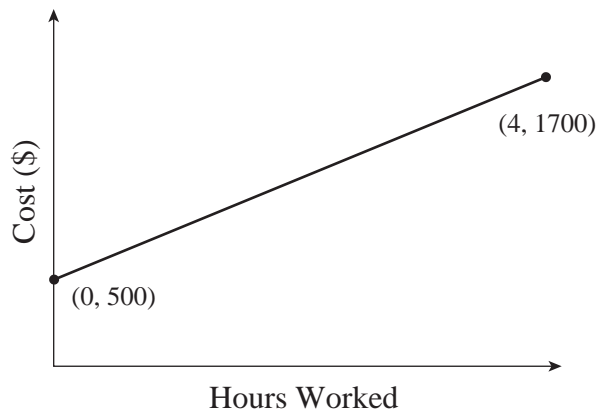
- A. 0 to 7
- B. 0 to 40
- C. 10 to 40
- D. 20 to 40

24. What is the x -intercept of the equation $y = 4x - 12$?

- A. 4
- B. 3
- C. 0
- D. -3

Use the following information for questions 25 and 26.

The graph below represents the cost to hire a DJ for a dance.



25. What is the y -intercept of this graph?

- A. 0
- B. 300
- C. 500
- D. 1700

26. What is the slope of this graph?

- A. $\frac{1}{425}$
- B. $\frac{1}{300}$
- C. 300
- D. 425

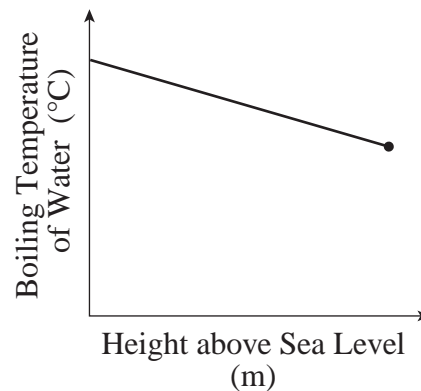
27. A tank contains 150 L of water and drains at a rate of 4 L per day. How many litres of water are left in the tank at the end of 31 days? Answer to the nearest litre.

Record your answer neatly on the Answer Sheet.

28. Which of the following rules best describes the table below?

x	y
-3	-7
-1	-5
3	-1
5	1

- A. Subtract 4 from x .
B. Multiply x by 2 and add 1.
C. Multiply x by 3 and add 2.
D. Multiply x by 2 and subtract 1.
29. The boiling temperature of water depends on the height above sea level. This relationship is shown in the graph below.

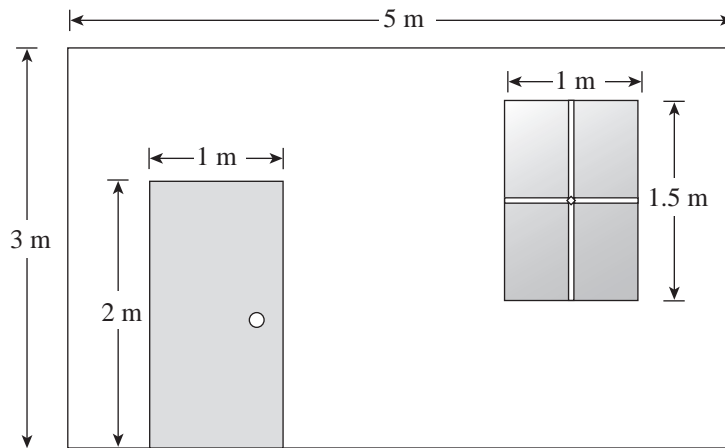


Which conclusion can be made **from this graph**?

- A. The boiling temperature of water **increases** as the height above sea level **increases**.
B. The boiling temperature of water **decreases** as the height above sea level **increases**.
C. The boiling temperature of water **decreases** as the height above sea level **decreases**.
D. The boiling temperature of water **does not change** as the height above sea level **decreases**.

30. Blackburn Music offers to sell an electric guitar for an initial payment of \$95.00 plus 18 equal monthly payments. If the total cost of the guitar is \$770.00 (taxes included), how much is each monthly payment?
- A. \$5.28
 - B. \$37.50
 - C. \$42.78
 - D. \$48.06
31. Anastasia needs to determine the dimensions of a refrigerator. Which measuring device should she use to take the measurements?
- A. Vernier caliper
 - B. trundle wheel
 - C. tape measure
 - D. micrometer
32. Laura knows she is 5 feet 6 inches tall. She applies for a new passport and needs to know her height in metric units. What is Laura's height in centimetres?
- A. 216.54 cm
 - B. 170.69 cm
 - C. 167.64 cm
 - D. 152.40 cm

33. A wall is to be covered in wallpaper, as shown in the diagram below.

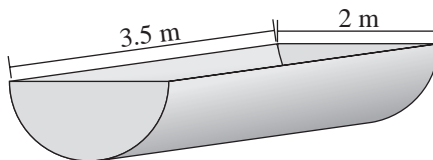


What is the minimum amount of wallpaper that is needed?

- A. 5.0 m^2
 - B. 11.5 m^2
 - C. 15.0 m^2
 - D. 18.5 m^2
34. The distance between Calgary and Edmonton on a map is 59 cm. If the map has a scale factor of 1:500 000, then what is the actual distance, in kilometres, between these two cities? Answer to the nearest kilometre.

Record your answer neatly on the Answer Sheet.

35. The surface area of a golf ball is 15 cm^2 greater than the surface area of a table-tennis ball. If the radius of a table-tennis ball is 1.85 cm, then what is the radius of the golf ball?
- A. 2.1 cm
B. 2.9 cm
C. 4.6 cm
D. 6.8 cm
36. A small gas container costs \$5.32 to fill. How much will it cost to fill a gas container with dimensions twice as large as the smaller container?
- A. \$5.32
B. \$21.28
C. \$31.92
D. \$42.56
37. A cylinder is cut in half to create a water trough as shown below.



What volume of water can this trough hold?

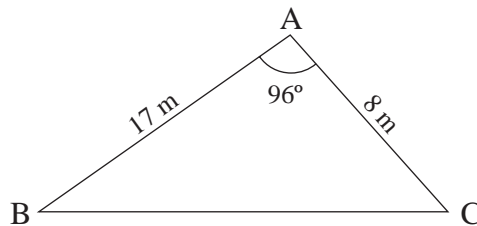
- A. 5.50 m^3
B. 11.00 m^3
C. 19.24 m^3
D. 21.99 m^3

38. A spherical balloon has a radius of 10 cm. If $10\,000\text{ cm}^3$ of additional air are pumped into the balloon, what is the new radius of the balloon?

- A. 13 cm
- B. 15 cm
- C. 30 cm
- D. 58 cm

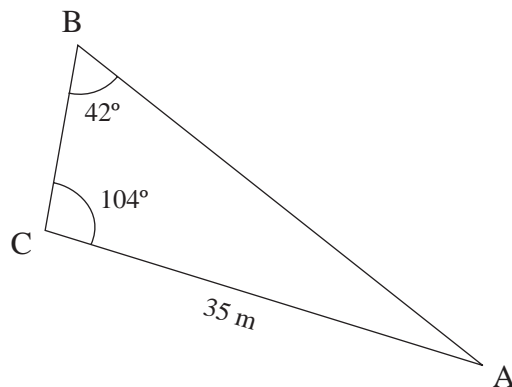
39. To determine the length of BC, which of the following can be used?

I.	Cosine Law
II.	Sine Law
III.	Pythagorean Theorem



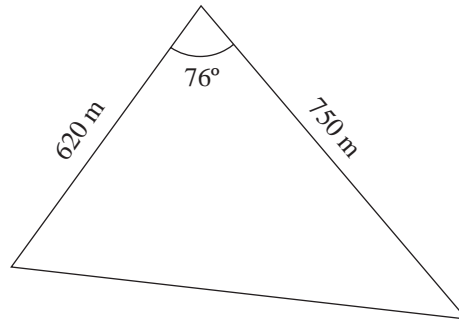
- A. I only
- B. II only
- C. I and III only
- D. I, II and III

40. What is the length of AB in metres? Answer to two decimal places.



Record your answer neatly on the Answer Sheet.

41. A farmer has a triangular field as shown below.



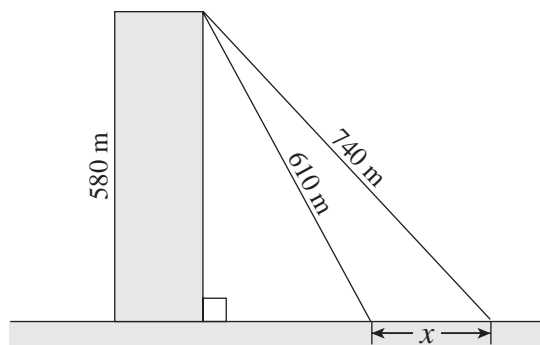
What is the **perimeter** of the field?

- A. 1792 m
- B. 2214 m
- C. 2220 m
- D. 2343 m

42. If $\sin A = 0.5736$, then what is the measure of $\angle A$, where $\angle A$ is between 0° and 180° ?

- A. 35°
- B. 55°
- C. 55° or 125°
- D. 35° or 145°

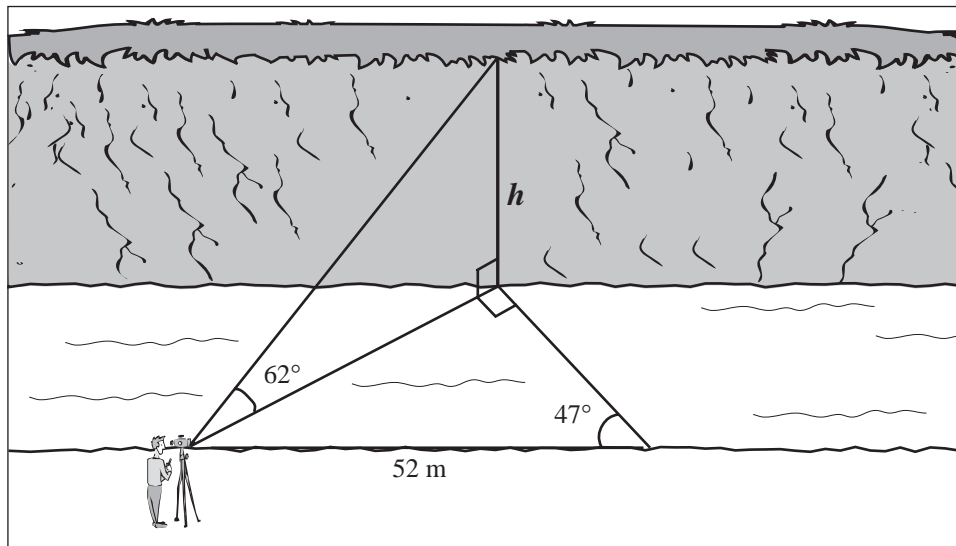
43. A tower is supported by two wires as shown in the diagram below.



How far apart are the two wires (x) ?

- A. 98 m
- B. 130 m
- C. 271 m
- D. 419 m

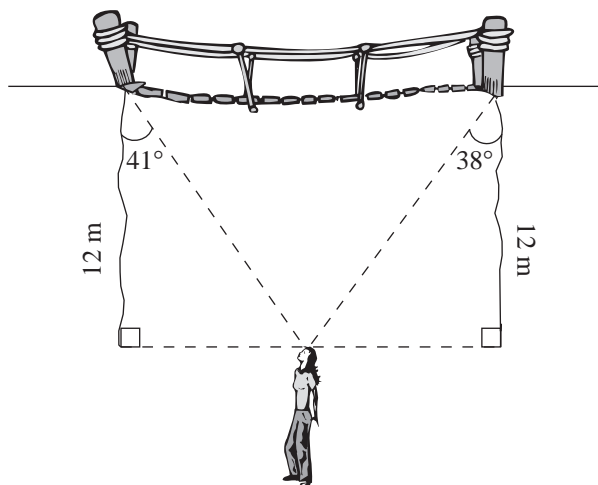
44. A surveyor takes measurements of a cliff across a river as shown below.



What is the height of the cliff?

- A. 38 m
- B. 72 m
- C. 81 m
- D. 143 m

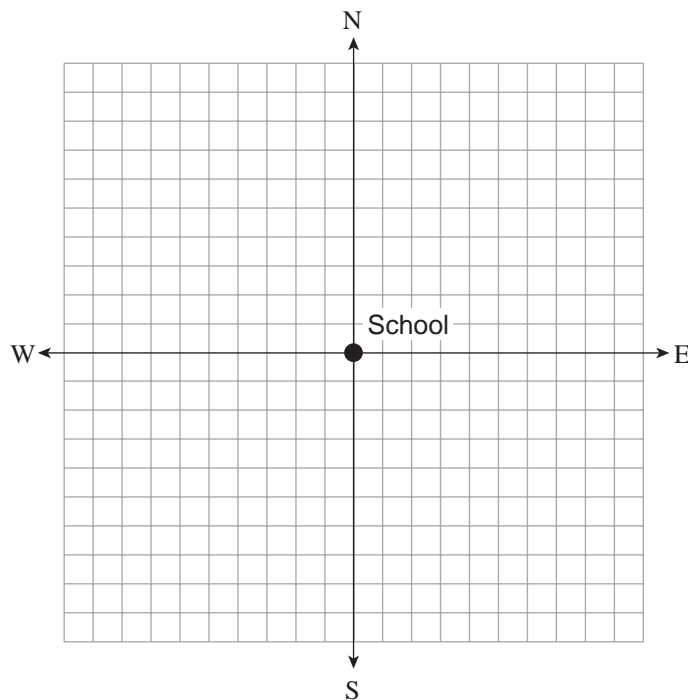
45. Eve is standing at a point 12 m below a bridge that is between two cliffs.



How long is the bridge?

- A. 15 m
- B. 20 m
- C. 24 m
- D. 29 m

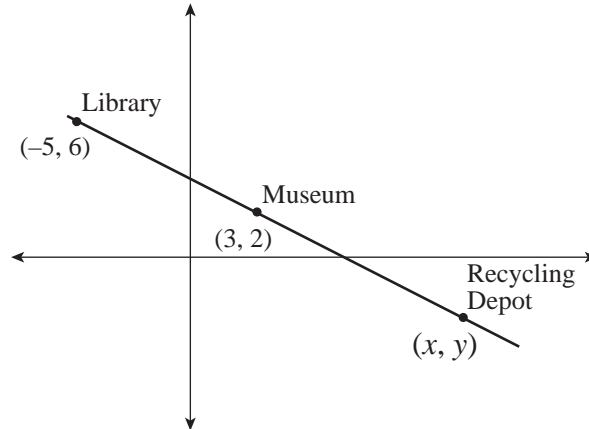
46. The revenue of a law firm in 1995 was \$450 000. In 2003, its revenue was \$590 000. Using the midpoint formula, calculate the law firm's revenue in the year 1999.
- A. \$140 000
 B. \$520 000
 C. \$540 000
 D. \$560 000
47. Which of the following is true for the distance between two different points?
- A. The distance is always positive.
 B. The distance is always negative.
 C. The distance can be positive or negative.
 D. The distance can be undefined.
48. Stacey lives 7 km east and 5 km north of the school. Kim lives 1 km east and 4 km south of the school.



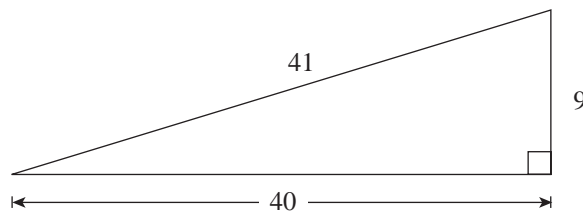
What is the straight-line distance between the two houses? Answer to two decimal places in kilometres.

Record your answer neatly on the Answer Sheet.

49. The library, the museum and the recycling depot are on a straight road as shown in the diagram below. If the museum is midway between the library and recycling depot, what are the coordinates of the recycling depot?



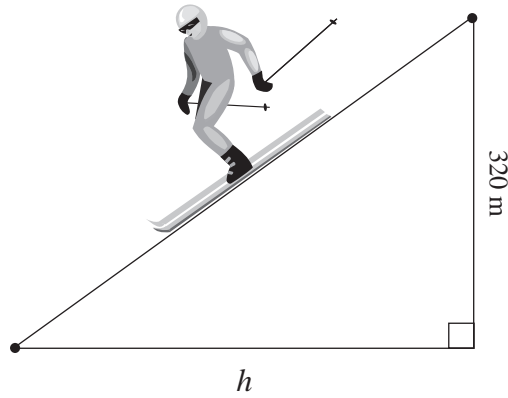
- A. $(-1, 2)$
B. $(8, -4)$
C. $(11, -2)$
D. $(11, -4)$
50. The following is a diagram of a roof.



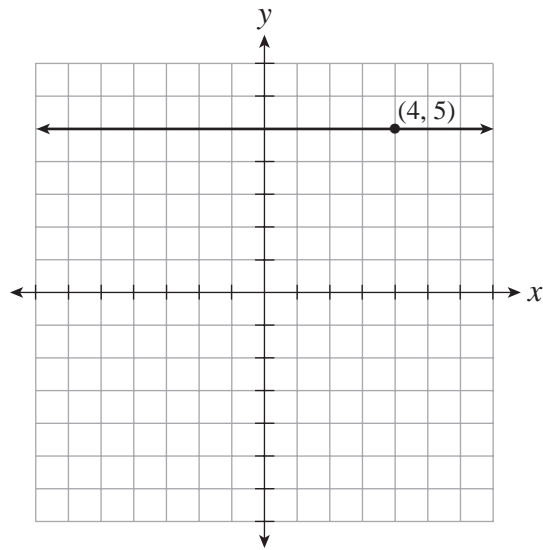
What is the slope of the roof?

- A. $\frac{41}{9}$
B. $\frac{9}{41}$
C. $\frac{40}{9}$
D. $\frac{9}{40}$

51. A ski hill has a slope of $\frac{2}{5}$. If the vertical distance is 320 m, what is the horizontal distance of section h ?



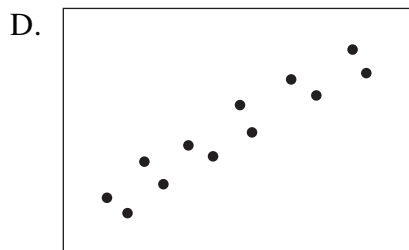
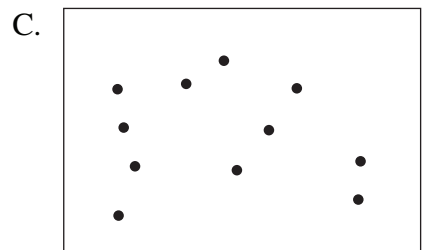
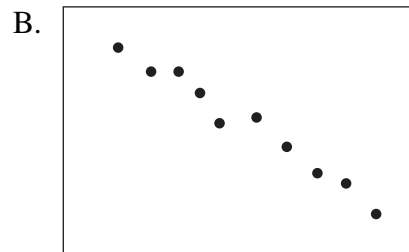
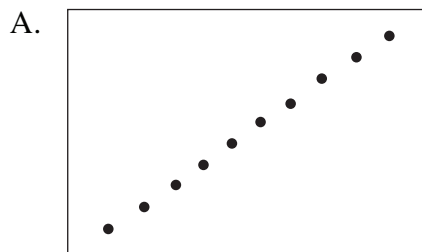
- A. 128 m
B. 320 m
C. 640 m
D. 800 m
52. What is the equation of the line below?



- A. $x = 4$
B. $y = 5$
C. $y = x + 5$
D. $y = 4x + 5$

53. A shuttle company charges an initial fee plus a cost per person. If there are 7 people, the cost is \$46.00. If there are 13 people, the cost is \$79.00. What is the cost per person?
- A. \$5.50
 - B. \$6.08
 - C. \$6.57
 - D. \$7.50

54. Which of the following graphs best represents a data set with a correlation coefficient, r , of 0.88?



Use the following information to answer questions 55 and 56.

The following table compares the length of a person's forearm (x) and height (y).

Forearm Length (inches)	Height (inches)
6	54
9	60
8	60
7	56
8	64
7.5	58

If height depends on forearm length, the following is the linear regression performed on the data.

```
LinReg
y=ax+b
a=2.624
b=38.768
r2=.5846956522
r=.7646539428
```

55. What is the line of best fit for this data?

- A. $y = 2.62x + 38.77$
- B. $y = 2.62 + 38.77x$
- C. $y = 0.58x + 0.76$
- D. $y = 0.58 + 0.76x$

56. Using the line of best fit, what should the forearm length be for a person whose height is 55 inches?

- A. 6.2 inches
- B. 6.5 inches
- C. 7.0 inches
- D. 18.3 inches

Use the following information to answer questions 57 and 58.

The following table gives data on basketball players.

Name	Average Minutes Played per Game	Average Points per Game
Kevin	38	27
LeBron	42	29
Allen	42	30
Dirk	39	27
Kobe	41	28

57. Using linear regression, what is the correlation coefficient, r , for this data?
Answer to two decimal places.

Record your answer neatly on the Answer Sheet.

58. Using linear regression, what would be the Average Points per Game for someone who played 31 minutes?
- A. 20
 - B. 22
 - C. 24
 - D. 44

59. Given this table of data, what is the slope of the equation of the line of best fit?

x	15	11	21	35	7	18
y	57	53	60	73	52	59

- A. 0.77
- B. 0.99
- C. 1.28
- D. 45.3

60. Given the values for the correlation coefficient, r :

-0.3, 0, -1, 0.9

Which value of r represents the strongest correlation?

- A. -0.3
- B. 0
- C. -1
- D. 0.9

You have **Examination Booklet Form A**. In the box above #1 on your **Answer Sheet**, ensure you filled in the bubble as follows.

Exam Booklet Form/ Cahier d'examen	A	B	C	D	E	F	G	H
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

END OF EXAMINATION

Examination Rules

1. The time allotted for this examination is two hours.
You may, however, take up to 60 minutes of additional time to finish.
2. Answers entered in the Examination Booklet will not be marked.
3. Cheating on an examination will result in a mark of zero. The Ministry of Education considers cheating to have occurred if students break any of the following rules:
 - Students must not be in possession of or have used any secure examination materials prior to the examination session.
 - Students must not communicate with other students during the examination.
 - Students must not give or receive assistance of any kind in answering an examination question during an examination, including allowing one's paper to be viewed by others or copying answers from another student's paper.
 - Students must not possess any book, paper or item that might assist in writing an examination, including a dictionary or piece of electronic equipment, that is not specifically authorized for the examination by ministry policy.
 - Students must not copy, plagiarize or present as one's own, work done by any other person.
 - Students must immediately follow the invigilator's order to stop writing at the end of the examination time and must not alter an Examination Booklet, Response Booklet or Answer Sheet after the invigilator has asked students to hand in examination papers.
 - Students must not remove any piece of the examination materials from the examination room, including work pages.
4. The use of inappropriate language or content may result in a mark of zero being awarded.
5. Upon completion of the examination, return all examination materials to the supervising invigilator.

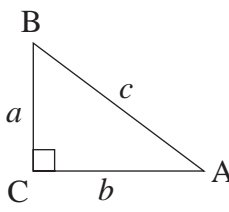
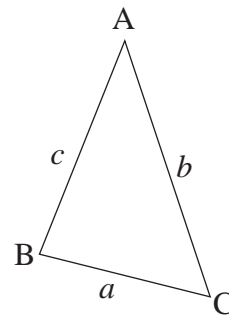
APPLICATIONS OF MATHEMATICS 10

STUDENT REFERENCE

UNIT CONVERSION

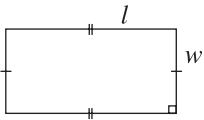
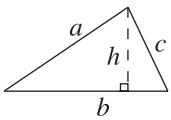
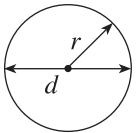
	Common Imperial	Imperial and Metric	Metric
Length	1 mile = 1760 yards 1 mile = 5280 feet 1 yard = 3 feet 1 yard = 36 inches 1 foot = 12 inches	1 mile \approx 1.609 km 1 yard \approx 0.9144 m 1 foot \approx 0.3048 m 1 inch \approx 2.54 cm	1 km = 1000 m 1 m = 100 cm 1 cm = 10 mm
Capacity (Volume)	1 gallon = 4 quarts 1 gallon = 8 pints 1 quart = 2 pints	1 gallon \approx 4.546 L	1 L = 1000 mL 1 mL = 1 cm ³
Mass (Weight)	1 imperial ton = 2000 pounds 1 pound = 16 ounces	1 pound \approx 0.454 kg 1 ounce \approx 28.35 g	1 t = 1000 kg 1 kg = 1000 g

FORMULAE

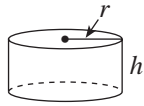
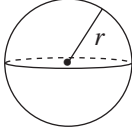
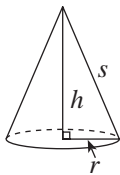
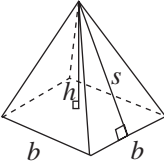
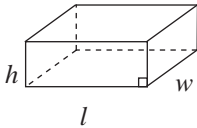
Trigonometry	Other Formulae
<p>(Put your calculator in Degree Mode)</p> <ul style="list-style-type: none"> Right triangles Pythagorean Theorem $a^2 + b^2 = c^2$ $\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$ $\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}$ $\tan A = \frac{\text{opposite}}{\text{adjacent}}$  <ul style="list-style-type: none"> Other triangles, use Sine Law or Cosine Law Law of Sines $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$ Law of Cosines $a^2 = b^2 + c^2 - 2bc \cos A$ or $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$ 	<ul style="list-style-type: none"> The equation of a line: $y = mx + b$ The slope of a line: $m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$ The distance between two points: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ The midpoint formula: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

GEOMETRIC FORMULAE

Key Legend	
l = length	P = perimeter
w = width	C = circumference
b = base	A = area
h = height	SA = surface area
s = slant height	V = volume
r = radius	
d = diameter	

Geometric Figure	Perimeter	Area
Rectangle 	$P = 2l + 2w$ or $P = 2(l + w)$	$A = lw$
Triangle 	$P = a + b + c$	$A = \frac{bh}{2}$
Circle 	$C = \pi d$ or $C = 2\pi r$	$A = \pi r^2$

NOTE: Use the value of π programmed in your calculator rather than the approximation of 3.14.

Geometric Figure	Surface Area	Volume
Cylinder 	$A_{top} = \pi r^2$ $A_{base} = \pi r^2$ $A_{side} = 2\pi rh$ $SA = 2\pi r^2 + 2\pi rh$	$V = \pi r^2 h$
Sphere 	$SA = 4\pi r^2$ or $SA = \pi d^2$	$V = \frac{4}{3}\pi r^3$
Cone 	$A_{side} = \pi rs$ $A_{base} = \pi r^2$ $SA = \pi r^2 + \pi rs$	$V = \frac{1}{3}\pi r^2 h$
Square-Based Pyramid 	$A_{triangle} = \frac{1}{2}bs$ (for each triangle) $A_{base} = b^2$ $SA = 2bs + b^2$	$V = \frac{1}{3}b^2 h$
Rectangular Prism 	$SA = wh + wh + lw + lw + lh + lh$ or $SA = 2(wh + lw + lh)$	$V = lwh$

NOTE: Use the value of π programmed in your calculator rather than the approximation of 3.14.

ROUGH WORK FOR GRAPHING
(No marks will be given for work done on this page.)

