



Applied

Grade 9 Assessment of Mathematics

Multiple-Choice Items

Spring 2005



Education
Quality and
Accountability
Office

*Please note: The format
of these booklets is
slightly different from that
used for the assessment.
The items themselves
remain the same.*

1. The average temperature during **10 days** in March is given by the expression

$$\frac{6(-2) - 5 + 3(-1)}{10}$$

What is the value of the expression?

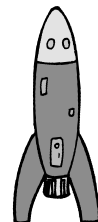
- a 2
 - b 1
 - c -1
 - d -2
2. Simplify the following expression:

$$3x(2x + 3) - 5x$$

- a $6x^2 - 5x + 3$
- b $6x^2 - 6x$
- c $15x^2 - 5x$
- d $6x^2 + 4x$

3. While experimenting with a toy rocket, Dan determines that he can model the rocket's height, h , in metres, with respect to time, t , in seconds, using the equation

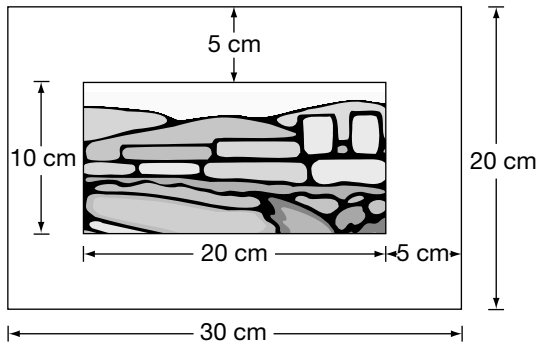
$$h = \frac{1}{2}t^2$$



Which calculation correctly finds the value of h when $t = 10$?

- a $h = \frac{1}{2} \times 10^2$
 $= 5^2$
 $= 25$
- b $h = \frac{1}{2} \times 10^2$
 $= \frac{1}{2} \times 20$
 $= 10$
- c $h = \frac{1}{2} \times 10^2$
 $= \frac{1}{2} \times 100$
 $= 50$
- d $h = \frac{1}{2} \times 10^2$
 $= \frac{1}{4} \times 100$
 $= 25$

4. A frame around a photograph is 5 cm wide.



What **percentage** of the entire area is the frame?

- a 25%
 - b 33%
 - c 50%
 - d 67%
5. What is the cost of a portable CD player, including 15% tax?



- a \$71.65
- b \$67.85
- c \$62.30
- d \$30.71

6. The advertisement below shows the sale price of a big-digit calculator.



What is the best estimate of the **regular price** of the big-digit calculator?

- a \$12
 - b \$14
 - c \$16
 - d \$18
7. A 4 L can of paint covers an area of 36 m².



What area will a 10 L can of paint cover?

- a 40 m²
- b 60 m²
- c 90 m²
- d 360 m²

8. Express the number 0.000 000 078 in scientific notation.

- a 7.8×10^{-8}
- b 7.8×10^{-9}
- c 7.8×10^8
- d 7.8×10^9

9. A ball is hit straight up into the air. The height of the ball, h , in metres, after t seconds is given by the following formula:

$$h = 5(6t - t^2).$$

What is the height of the ball after 3 s?

- a 45 m
- b 51 m
- c 75 m
- d 81 m

10. A steel bar will expand when it is heated and contract when it is cooled. The relationship between the length of the bar, L , (mm) and the temperature, T , ($^{\circ}\text{C}$) is given by

$$L = 5000 + 0.12(T - 20).$$

What is the length of the steel bar when the temperature is 45°C ?

- a 5001 mm
- b 5002 mm
- c 5003 mm
- d 5004 mm

11. **Printing Plus** prints yearbooks for schools.

Schools pay the following:

- a fixed cost of \$98;
- a variable cost of \$1.50 per yearbook and
- \$3.78 for the cover of each yearbook.

Which equation best represents the **total cost**, C , in dollars, if n is the **number of yearbooks**?

- a $C = 1.5n + 98$
- b $C = 98n + 5.28$
- c $C = 1.50n + 101.75$
- d $C = 5.28n + 98$

12. The following tables express distance, in metres, as a function of time, in seconds.

Which table represents a **linear** relation?

a

Time (s)	Distance (m)
0	236
1	231
2	216
3	191

b

Time (s)	Distance (m)
0	1
1	2
2	4
3	8

c

Time (s)	Distance (m)
0	28
1	46
2	50
3	64

d

Time (s)	Distance (m)
0	16
1	12
2	8
3	4

13. Cheryl records the temperature, in degrees Celsius, outside her house each morning before she goes to school:

12 20 14 23 22 16 12

What is the mean outside temperature, in degrees Celsius, according to Cheryl's record?

- a 12
- b 16
- c 17
- d 19

14. To board a dog at a kennel, the customer is charged a **flat fee** of \$20, plus \$13 **per day** that the dog is at the kennel.

The equation relating the **total cost**, C , and the **number of days**, n , is given by

- a $C = \frac{13}{20}n$
- b $C = \frac{20}{13}n$
- c $C = 20n + 13$
- d $C = 13n + 20$

15. Sergio sells 7 models of CD players. The table shows the unit cost of each model and the number of CD players of that model sold in the past month.

Model	Unit cost (\$)	Number sold
A	55	11
B	70	14
C	90	17
D	100	21
E	120	24
F	150	29
G	200	41

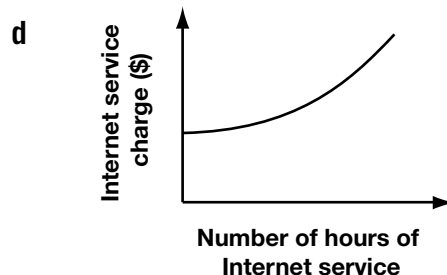
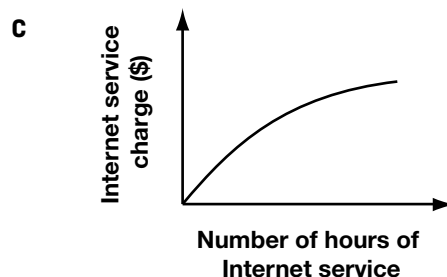
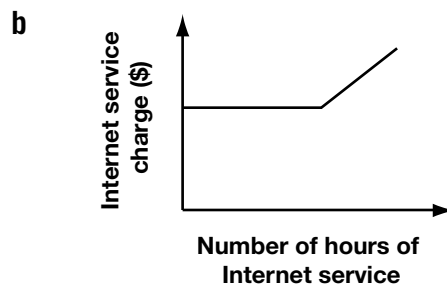
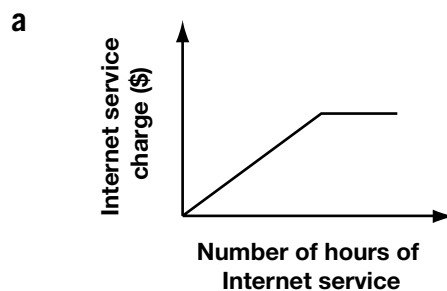


Which statement about the relationship between the unit cost and the number of CD players sold is **true**?

- a There is no relationship between the unit cost and the number sold.
- b As the unit cost increases, the number sold decreases.
- c As the unit cost increases, the number sold is constant.
- d As the unit cost increases, the number sold increases.

16. An Internet service provider charges \$18.00 for the first 10 h each month plus \$2.00 for each additional hour of service.

Which graph shows the relationship between total charges in a month and the number of hours of Internet service?



17. Natasha works for a computer company. The table shows her annual salary in the last five years.

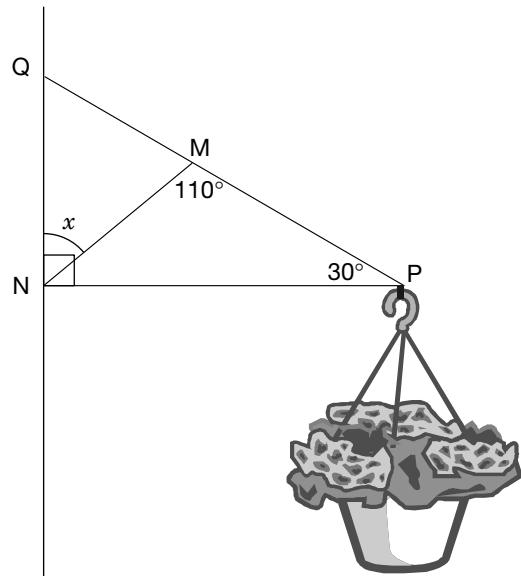
Year	Annual salary (\$)
1	32 000
2	33 600
3	35 200
4	36 800
5	38 400



If the trend continues, what will Natasha's annual salary be in the 8th year?

- a \$40 000
- b \$43 200
- c \$46 400
- d \$49 600

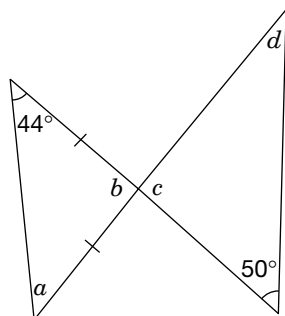
18. A flowerpot hangs from a brace. $\triangle MNQ$ and $\triangle MNP$ form the brace.



What is the value of x ?

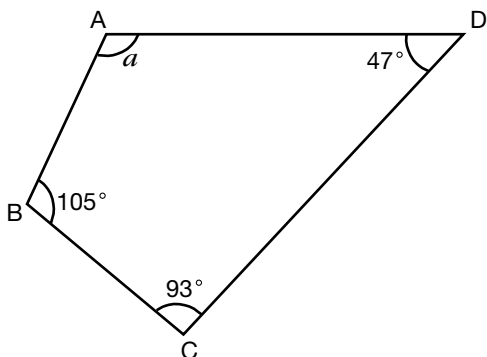
- a 22°
- b 30°
- c 40°
- d 50°

19. What is the **sum** of the measures of angles a , b , c and d ?



- a 136°
- b 166°
- c 180°
- d 266°

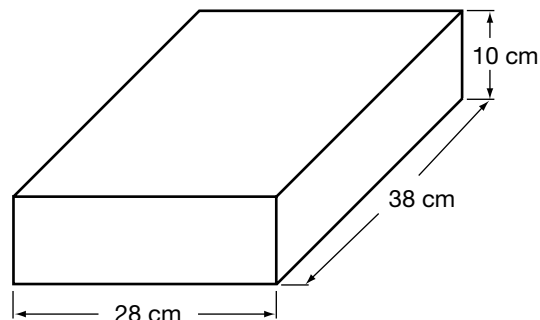
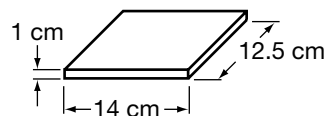
20. ABCD is a quadrilateral.



What is the value of a ?

- a 105°
- b 115°
- c 120°
- d 125°

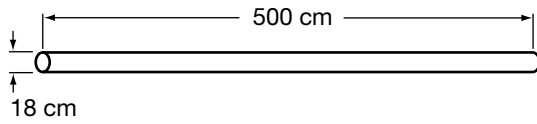
21. Elisa wants to pack CD cases into a storage box.



What is the largest number of CD cases Elisa can pack inside the **covered** storage box?

- a about 40
- b about 50
- c about 60
- d about 70

- 22.** A metal air duct is made in the shape of a cylinder and is open at both ends.

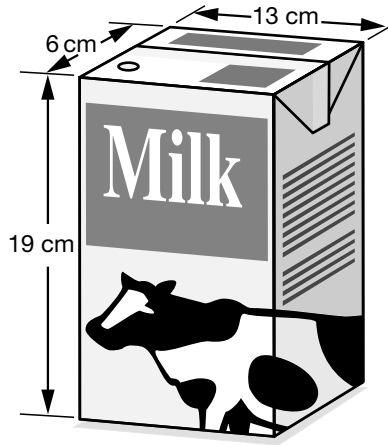


The air duct is made from a sheet of metal.

Which expression shows the area of the curved surface of the air duct?

- a** $2\pi \times 9 \times 500 \text{ cm}^2$
- b** $2\pi \times 18 \times 500 \text{ cm}^2$
- c** $\pi \times 92 \times 500 \text{ cm}^2$
- d** $\pi \times 182 \times 500 \text{ cm}^2$

- 23.** A carton of milk measures $6 \text{ cm} \times 13 \text{ cm} \times 19 \text{ cm}$.

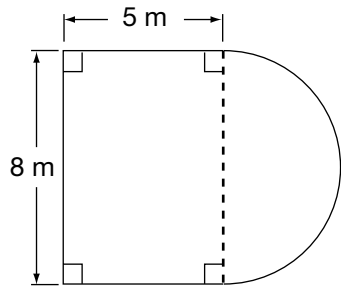


Hint:
 $1000 \text{ cm}^3 = 1 \text{ L}$

About how much milk can the carton hold when filled to the top?

- a** 1 L
- b** 1.5 L
- c** 2 L
- d** 2.5 L

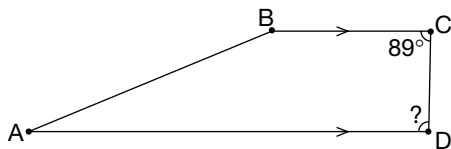
24. The figure below shows a rectangle and a semi-circle.



What is the area of this figure, correct to the nearest tenth of a square metre?

- a 46.3 m²
 - b 65.1 m²
 - c 90.3 m²
 - d 140.5 m²
25. The figure ABCD is a trapezoid.
BC is parallel to AD.

The measure of angle BCD is 89°.
What is the measure of angle CDA?

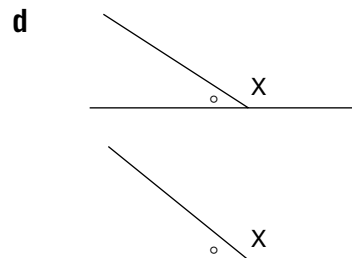
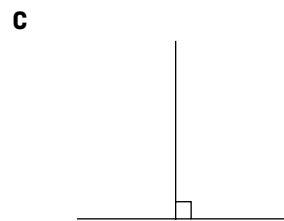
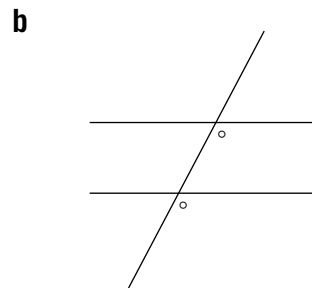
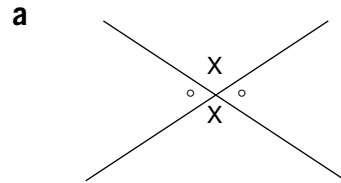


Hint:
The diagram is **not**
drawn to scale.

- a 21°
- b 86°
- c 90°
- d 91°

26. “When two lines intersect, the opposite angles are equal.”

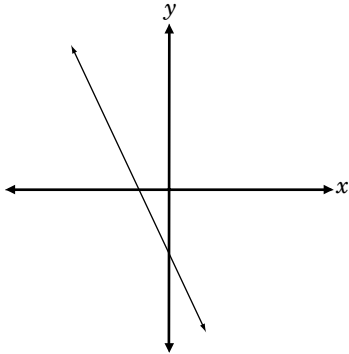
Which of the diagrams **illustrates** the above **statement**?



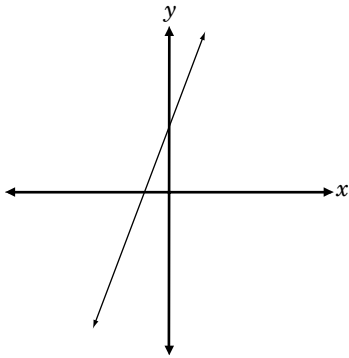
27. Which of the following graphs best represents the line with

- a slope of 3 and
- a y -intercept of -2 ?

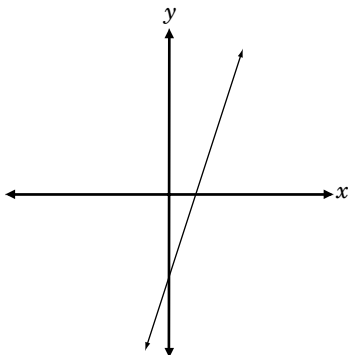
a



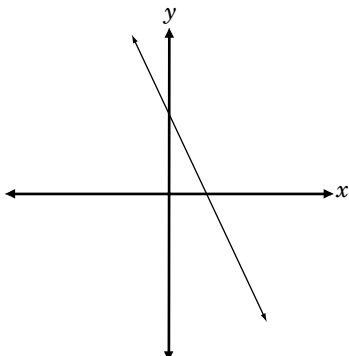
b



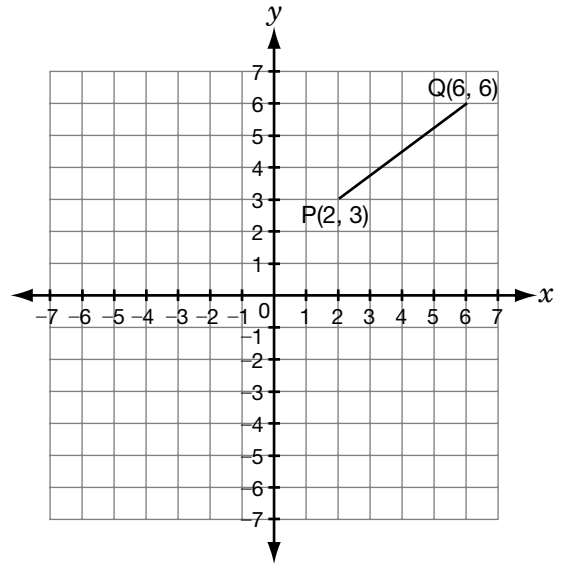
c



d



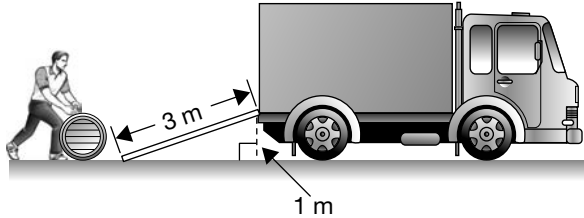
28. P is the point $(2, 3)$ and Q is the point $(6, 6)$.



What is the slope of the line segment PQ?

- a $\frac{3}{4}$
- b $\frac{8}{9}$
- c $\frac{9}{8}$
- d $\frac{4}{3}$

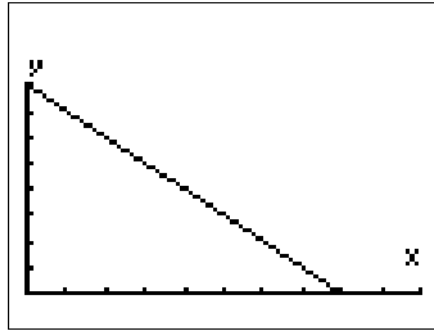
29. Robert uses a ramp 3 m in length to allow him to roll a barrel onto the deck of a truck. The deck of the truck is 1 m above the ground.



What is the best estimate of the slope of the ramp?

- a 0.15
- b 0.25
- c 0.35
- d 0.45

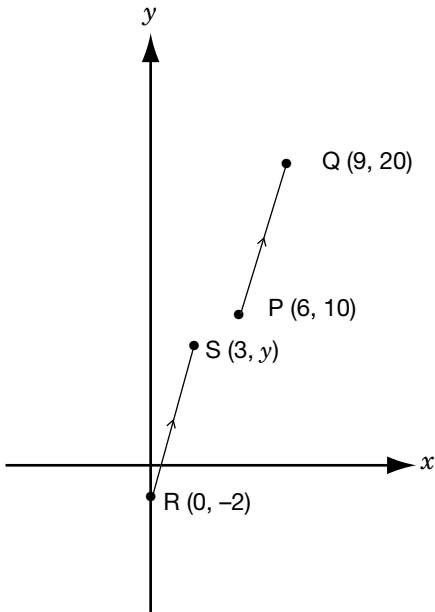
30. Study the display on Marie's graphing calculator.



Which statement describes the relation between x and y ?

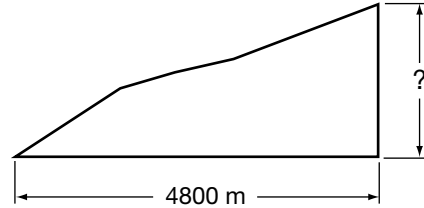
- a y increases linearly as x increases.
- b y decreases linearly as x increases.
- c y increases non-linearly as x increases.
- d y decreases non-linearly as x increases.

- 31.** PQ and RS are parallel line segments.
What is the value of y ?



- a** 5
- b** 6
- c** 7
- d** 8

- 32.** For an easy ski run, a ski hill must have an average slope that is about $\frac{1}{8}$. A new ski slope is to be constructed that will cover a horizontal distance of 4800 m.



What is the vertical drop that the hill must have in order to be an easy ski run?

- a** about 600 m
- b** about 620 m
- c** about 4400 m
- d** about 4464 m



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