Academic

Grade 9 Assessment of Mathematics

Multiple-Choice Items

Winter 2005
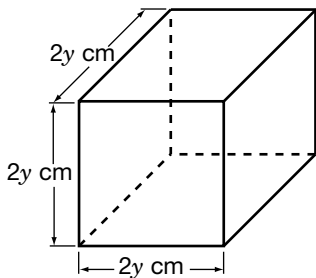
EQAO

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. What is the sale price of the skateboard?

Regular Price
$160

All items
25% off

a $40.00

b $64.00

c $120.00

d $135.00

2. Each side of a cube is $2y$ cm long. What is the volume of the cube?

2y cm

2y cm

2y cm

a $8y^3$ cm^3

b $6y$ cm^3

c $2y^3$ cm^3

d $2y$ cm^3

3. Kaya works as a translator. She charges 21¢ for each word she translates.

Which expression should Kaya use to calculate her charge, in dollars, for translating a document with n words?

a $\$\dfrac{21 \times n}{100}$

b $\$\dfrac{100}{21 \times n}$

c $\$\dfrac{n}{21 \times 100}$

d $\$\dfrac{21 \times 100}{n}$

4. Mark records his car's odometer reading. He travels at approximately the same speed for the whole journey and makes only one 30-min rest stop.

Time	Reading (km)
12:00 noon	25 091
1:00 p.m.	25 178
2:00 p.m.	25 222
3:00 p.m.	25 310
4:00 p.m.	25 395
5:00 p.m.	25 483

When does Mark most likely make his 30-min rest stop?

a   Between 1:00 p.m. and 2:00 p.m.

b   Between 2:00 p.m. and 3:00 p.m.

c   Between 3:00 p.m. and 4:00 p.m.

d   Between 4:00 p.m. and 5:00 p.m

5. In a soccer league, a win counts for 2 points, a tie counts for 1 point and a loss counts for 0 points. A soccer team has 5 wins, 2 ties and 3 losses.

If the team continues to win, tie and lose in the same ratio, which of the following values is the best prediction of their point total after 40 games?

a   36 points

b   48 points

c   96 points

d   480 points

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

Sale Price
$7⁹⁹
Save 50%

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. Juan would like to order some stationery items from a catalogue. He can spend up to $15.00 but not more.

Guaranteed Low Prices!

$3.13/item	$2.39/item	$4.28/item
1" Binder	Glue Stick	Mechanical Pencil
$1.96/item	$6.49/item	$1.51/item
Notebook	Stapler	Steel Clip

Plus 15% tax on all items

Which of the following groups of items, including 15% tax, can Juan afford to buy with his $15.00?

a   One binder, one stapler and three steel clips

b   Two steel clips, two binders and two notebooks

c   One notebook, one stapler and one mechanical pencil

d   One binder, one glue stick and two mechanical pencils

8. An influenza virus has a surface area of

0.000 000 05 mm^2.

What is this number expressed in scientific notation?

a 5×10^{-7} mm^2

b 5×10^{-8} mm^2

c 5×10^{7} mm^2

d 5×10^{8} mm^2

9. Simplify fully:

$-5x(4 - 3x) + 2x^2$

a $2x^2 - 17x$

b $2x^2 - 23x$

c $17x^2 - 5x$

d $17x^2 - 20x$

10. Bob is thinking of a number. He adds 15 to his number and finds that the result is four times his number.
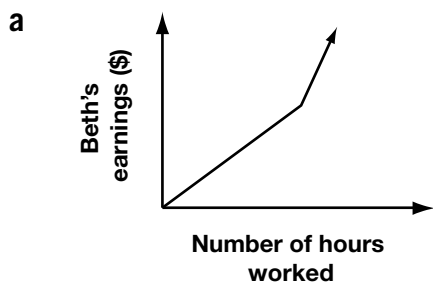

Suppose x is Bob's number. Which equation is always true?

a $15 - x = \frac{x}{2}$

b $15 - x = 4x$

**c** $x + 15 = \frac{x}{4}$

d $x + 15 = 4x$

11. Beth works at a grocery store. She earns $8/h for her first 20 h of work in a week. She earns $11/h for working beyond 20 h a week.

Which graph shows the relationship between Beth's earnings and the number of hours she works in a week?

a

Beth's earnings ($) — Number of hours worked

b

Beth's earnings ($) — Number of hours worked

c

Beth's earnings ($) — Number of hours worked

d

Beth's earnings ($) — Number of hours worked
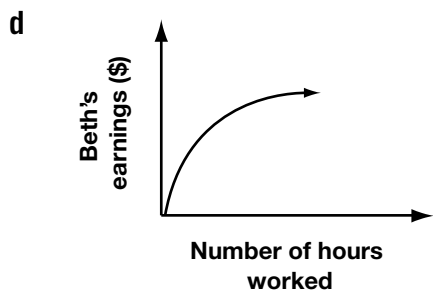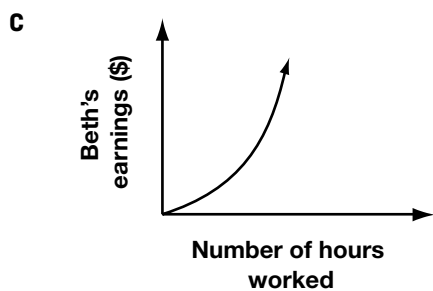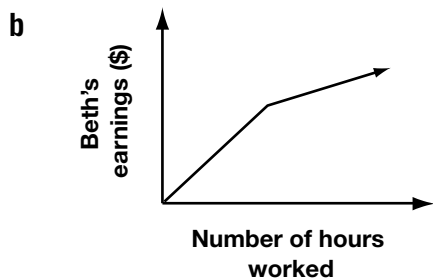
12. A local community group is organizing a skating event. The group decides how much to charge for tickets to the event and then plots a graph to show the relationship between the money they will make from ticket sales and the number of tickets sold.

Ticket Sales vs. Number of Tickets Sold

Ticket sales ($) — Number of tickets sold
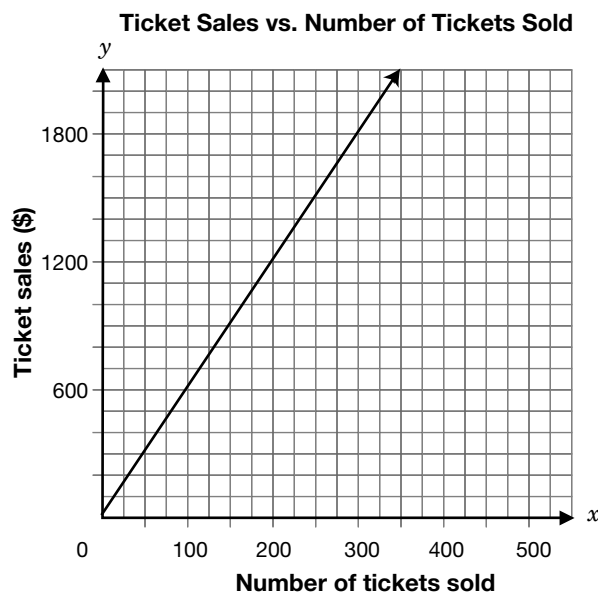
According to the graph, how many tickets must the community group sell in order to make $1500?

a 200

b 225

c 250

d 275

13. The graph below shows the relationship between how much a taxi company charges for a ride and the distance travelled.

Amount Charged vs. Distance Travelled
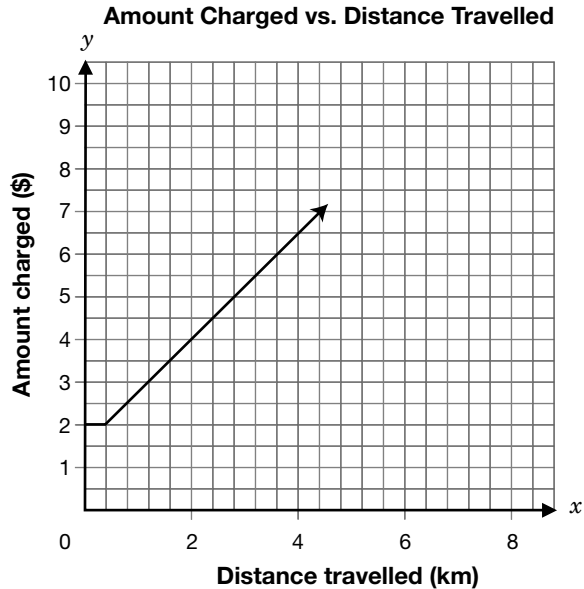
How far has a customer travelled if the charge for the ride is $9?

a 4.8 km

b 5.2 km

c 5.8 km

d 6.0 km

14. 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.

15. A submarine is submerging. The graph shows the distance below sea level the submarine has descended over time.

Distance Below Sea Level vs. Time
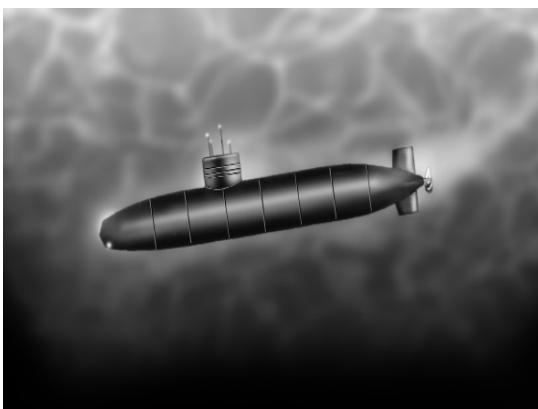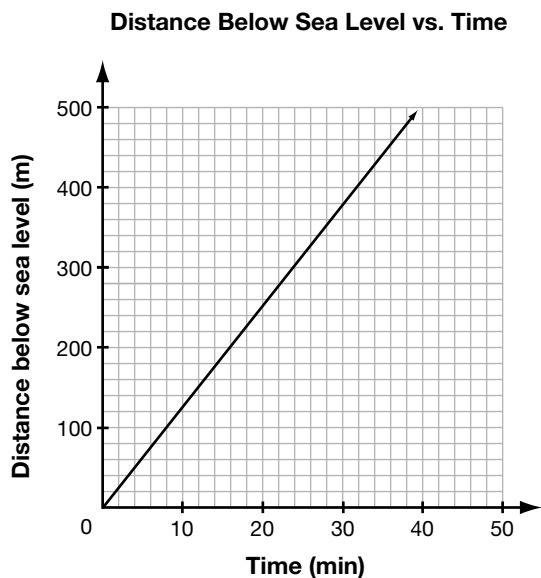
How far below sea level has the submarine descended after 24 min?

a   300 m

b   325 m

c   350 m

d   375 m

16. 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

17. Scientists find that the height of a person, h, in centimetres, is related to the length of the person's femur bone, f, in centimetres, according to the following formula:

$$h = 69.09 + 2.24f$$
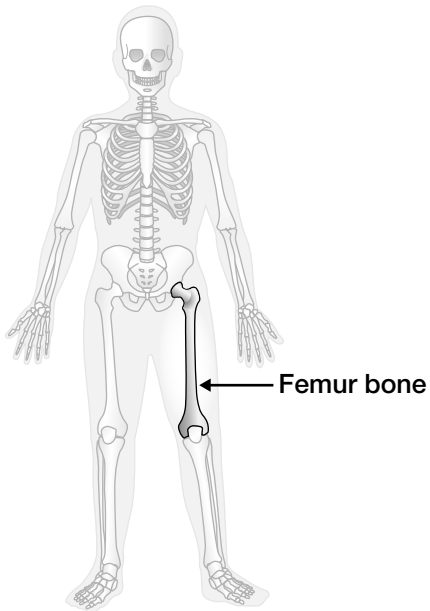
Femur bone

According to the formula, what is **the height** of a person with a femur bone of 48.6 cm in length?

a   109 cm
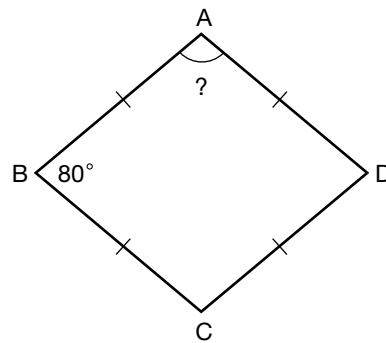
b   178 cm

c   186 cm

d   347 cm

18. ABC is an equilateral triangle. BC is extended to D so that ∠CAD = 25°.
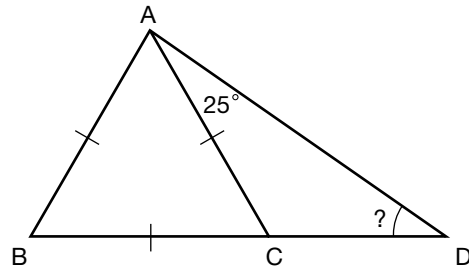
What is the measure of ∠ADC?

a   25°

b   35°

c   45°

d   55°

19. ABCD is a quadrilateral with all sides the same length. ∠B = 80°.

What is the measure of ∠A?

a   80°

b   90°
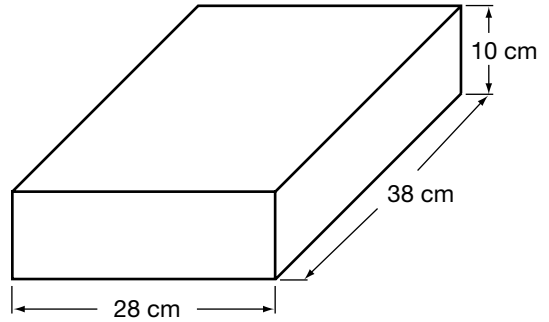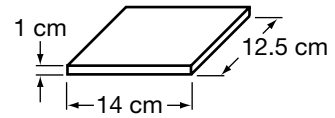
c   100°

d   110°

20. ABCD is a quadrilateral.
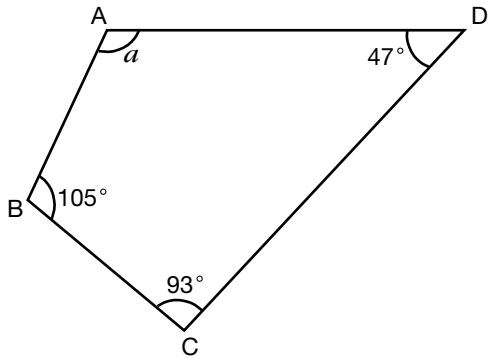
What is the value of a?

a   105°
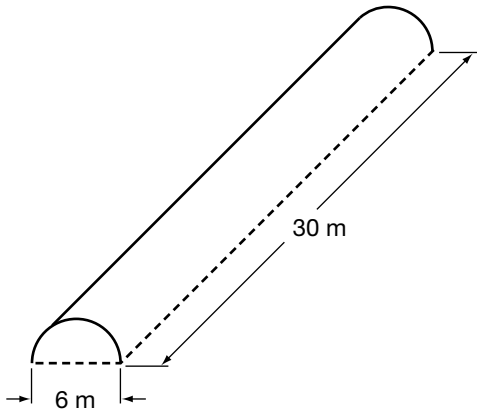
b   115°

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

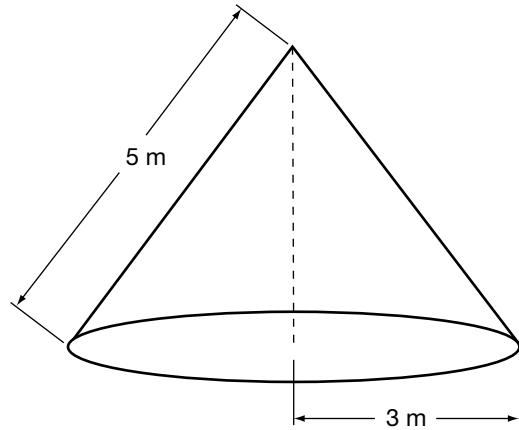**b**   about 50

c   about 60

d   about 70

22. The figure shows a greenhouse roof in the shape of half a cylinder.

30 m

6 m

What is the approximate surface area of the curved roof?

a 283 m^2

b 424 m^2

c 565 m^2
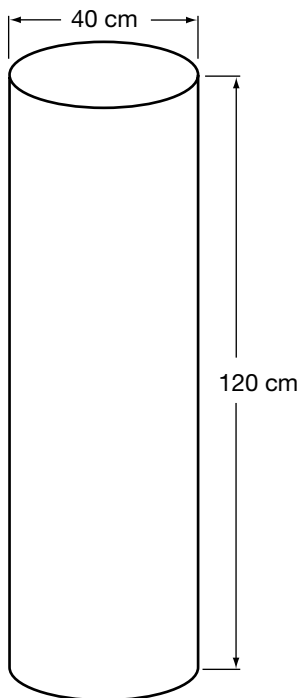
d 848 m^2

23. A tent has the shape of a cone. The radius of the base is 3 m, and the slant height is 5 m.

5 m

3 m

What is the approximate surface area of the tent, including the floor?

a 38 m^2

b 48 m^2

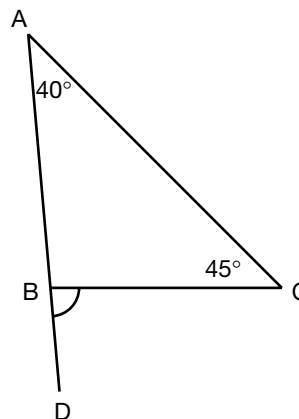**c** 75 m^2

d 95 m^2

24. A cylindrical hot water heater has a diameter of 40 cm and a height of 120 cm.

40 cm

120 cm

Which of the following expressions shows the maximum volume of water that the heater can hold?
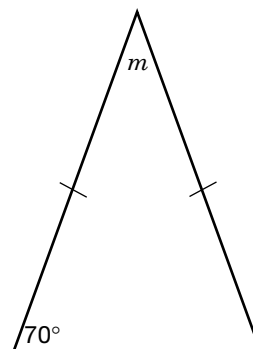
a $\pi \times 20^2 \times 120 \text{ cm}^3$

b $\pi \times 40^2 \times 120 \text{ cm}^3$

c $2\pi \times 20 \times 120 \text{ cm}^3$

d $2\pi \times 40 \times 120 \text{ cm}^3$

25. ABC is a triangle. AB is extended to D.

A

40°

45°

B

C

D

What type of angle is $\angle$CBD?

a A straight angle

b An obtuse angle

c An acute angle

d A reflex angle

26. The figure below shows an isosceles triangle.

m

70°

What is the value of m?
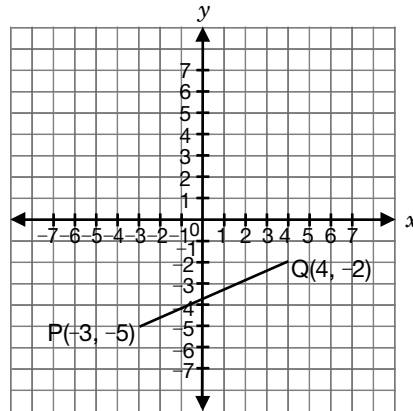
a 40°

b 50°

c 60°

d 70°

27. Four points, A, B, C and D, are marked on an *xy*-plane and joined by line segments as shown.
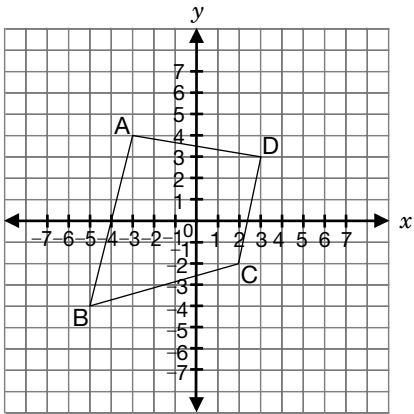
Which line segment has a **negative** slope?

a BA

b BC

c CD

d AD

28. Identify the equation that represents the line with a *y*-intercept of 600 and a slope of 50.

a $y = 50x$

b $x = 600y$

c $y = 600x + 50$

d $y = 50x + 600$

29. PQ is a line segment with slope $\frac{3}{7}$, as shown below.
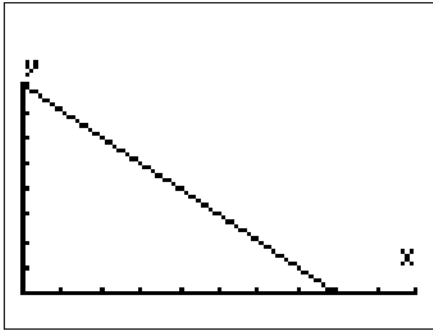

The point R is plotted so that RQ is **perpendicular** to PQ.

Which of the following points could be point R?

a $(1, 5)$

b $(2, 4)$
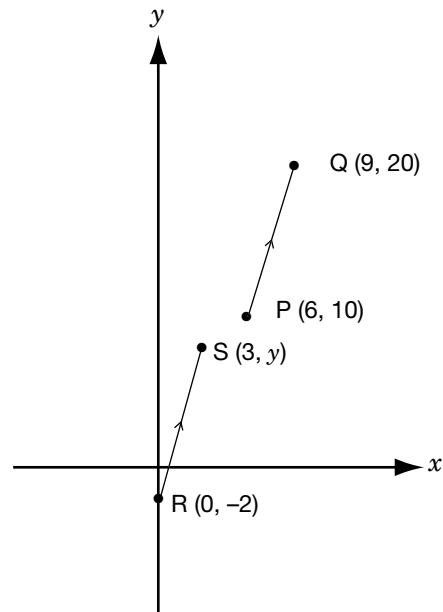
c $(3, 2)$

d $(4, 1)$

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

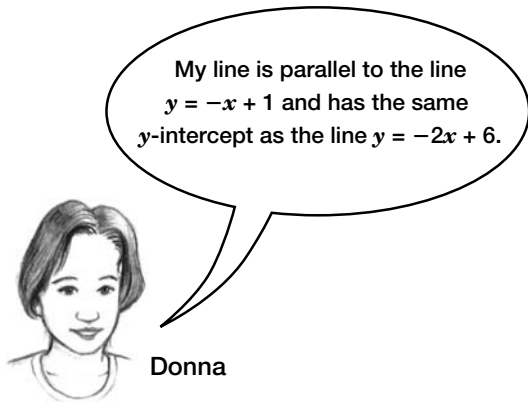Which statement describes the relation between x and y?

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. Donna has correctly drawn a line on an *xy*-plane.

My line is parallel to the line $y = -x + 1$ and has the same *y*-intercept as the line $y = -2x + 6$.

Donna

Which of the following equations represents the line that Donna has drawn?

a $y = x + 3$

b $y = x + 6$

c $y = -x + 6$

d $y = -x + 3$

STOP