Academic

Grade 9 Assessment of Mathematics

Spring 2007
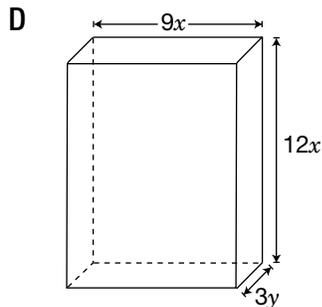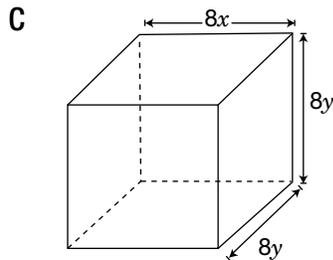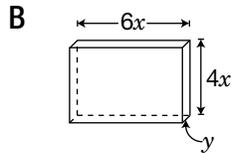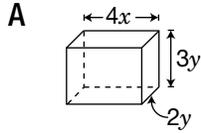
SAMPLE ASSESSMENT QUESTIONS

Education Quality and Accountability Office

EQAO

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

1 Which of the following fish tanks would contain an amount of water represented by the expression $V = 24x^2y$ when completely full?

A

B

C

D

2 Theo plans to purchase a new long-distance telephone plan called the Silver Plan. Under this plan, the telephone company determines the monthly cost using the following charges.

- The base fee is $30/month, which includes up to 150 minutes of long distance.

- The cost for all minutes over 150 each month is $0.15/minute.

With the Silver Plan, how much will it cost Theo to talk long-distance for 230 minutes over one month?

F $12.00

G $34.50

H $42.00

J $64.50

3 A rectangular field has a **perimeter** of $(10a - 6)$ metres and a width of $2a$ metres.
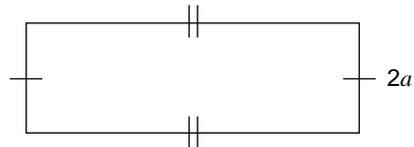
Which expression represents the **length** of this field?

A $8a - 6$

B $12a - 6$

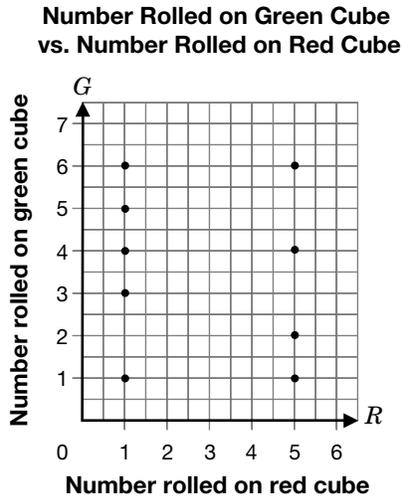**C** $3a - 3$

D $3a^2 - 3$

■4 Disc-ussion

Tyler, Raven and Deb are discussing the number of CDs they each own. They find that the following statements are true:

- Tyler owns five more than twice the number of CDs Raven owns.

- Deb owns three times as many CDs as Tyler.

Using x to represent the number of CDs Raven owns, write an expression for the total number of CDs the three friends own. Show your work and simplify your answer.

5 For a new game, Xiao makes two numbered cubes: one green and one red. She randomly assigns numbers on the six faces of each of the cubes, **possibly** repeating some numbers.

She rolls the red and the green cubes together nine times. She displays the results in a graph.

**Number Rolled on Green Cube
vs. Number Rolled on Red Cube**

Number rolled on green cube

Number rolled on red cube

Which of the following statements does the data in the graph **most likely** suggest about the cubes?

A Each cube has fewer than 6 distinct numbers on its faces, as some numbers are repeated on the cubes' faces.

B Each cube has 6 distinct numbers on its faces, as no numbers are repeated on the cubes' faces.

C The green cube has fewer than 6 distinct numbers on its faces, as some numbers are repeated on the cube's faces.

D The red cube has fewer than 6 distinct numbers on its faces, as some numbers are repeated on the cube's faces.

6 The charges on a monthly water bill are $0.86 per m^3 of water used plus a service charge of $4.49.

Let C = total charge, in dollars, and
w = total amount of water used, in m^3.
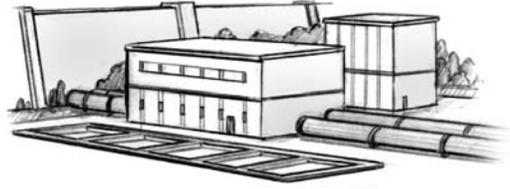
Which equation represents the relationship between C and w?

F $C = 4.49 \times 0.86w$

G $C = 4.49w + 0.86$

H $C = 4.49 + 0.86w$

J $C = (4.49 + 0.86)w$

7 Alex's Rose Shop makes up bouquets and charges for the vase, plus a cost per rose.

• The shop charges $32.85 for a bouquet of 12 roses.

• The shop charges $50.85 for a bouquet of 20 roses.

What does Alex's Rose Shop charge for a vase?

A $18.00

B $8.00

C $5.85

D $2.74

8 Temira needs to rent a car. She considers the following price equations, where C is the total cost, in dollars, and n is the number of days.

| Company	Equation
Rentway	$C = 20n + 100$
Cheapie's Rentals	$C = 25n + 50$
Cars Cars Cars	$C = 50n$
Drive Away	$C = 15n + 125$

Which company should she choose if she is planning to rent the car for at least 10 days?

F Rentway

G Cheapie's Rentals

H Cars Cars Cars

J Drive Away

9 Two Internet service providers are competing.

The equation $C = \mathbf{0.04}t + \mathbf{10}$ represents the relationship between the total cost, C, charged by Internet Connections and the time, t.
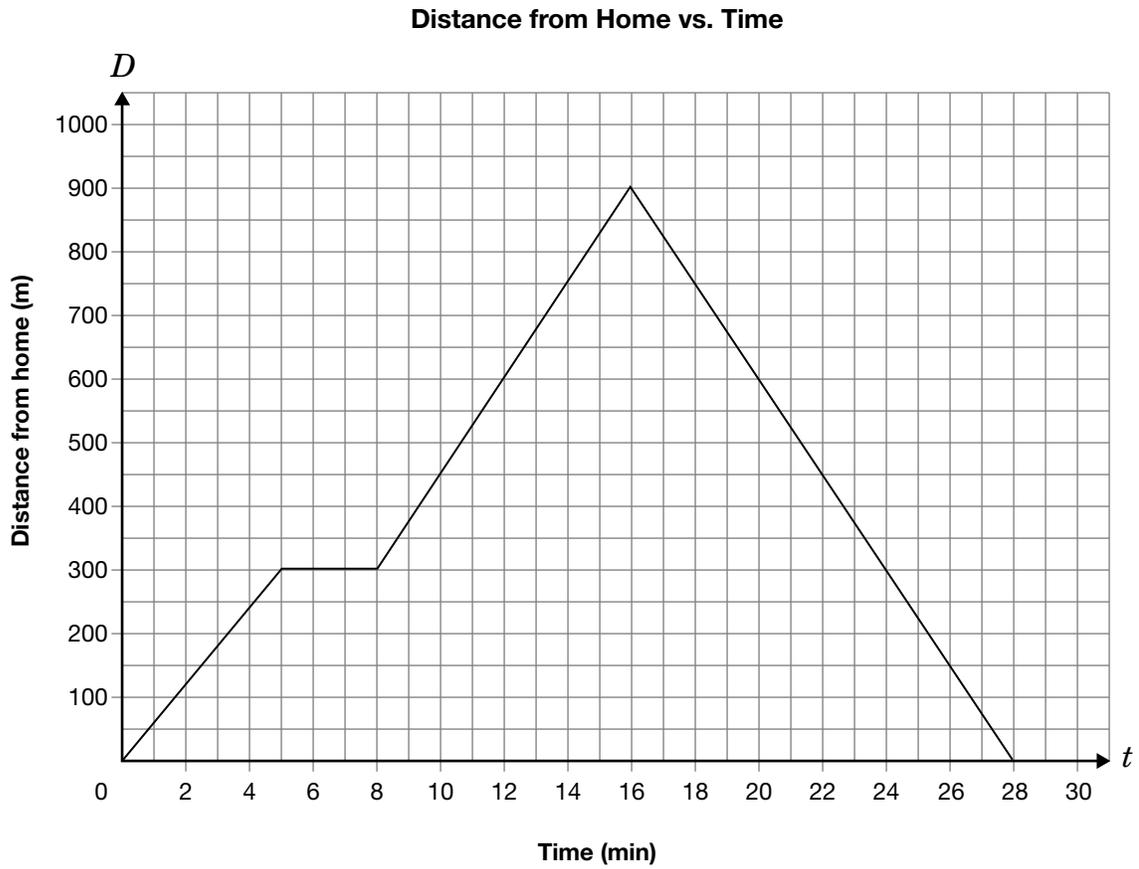
Total Cost vs. Time
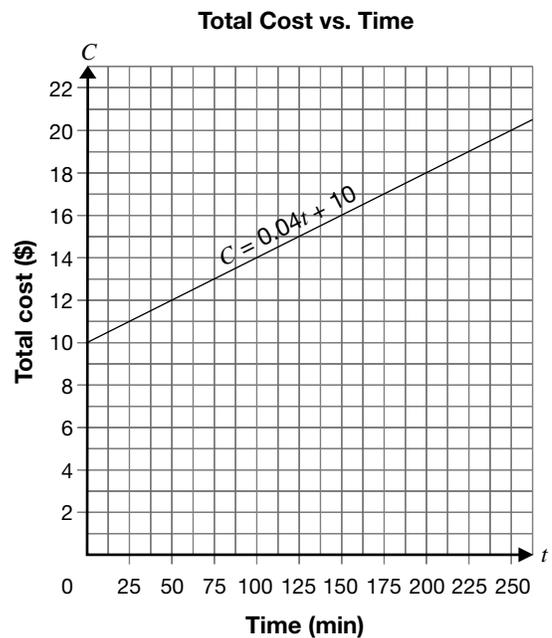
Surf Away wants **always** to be cheaper than Internet Connections.

Which of the following equations represents this situation?

A $C = 15$

B $C = 0.02t + 11$

C $C = 0.03t + 9$

D $C = 0.05t + 8$

⑩ Selena's Stroll

The graph below represents 4 segments of Selena's morning walk.

Distance from Home vs. Time

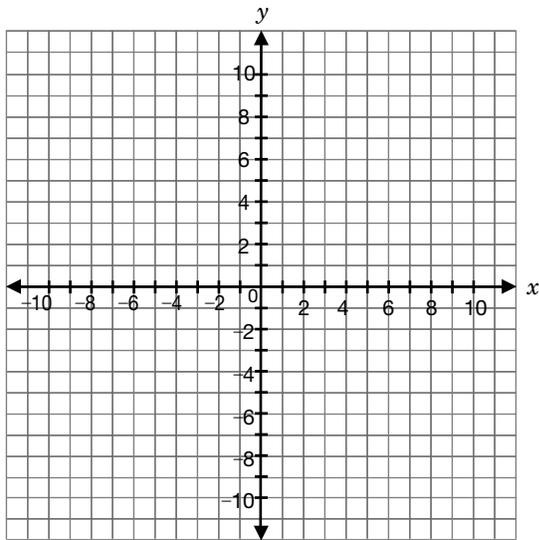Describe the four segments of Selena's walk.

Hint
Include information about
• direction,
• distance,
• time and
• speed, in m/min.

11 Salazar is asked to graph the linear relation represented by $2x - 3y + 6 = 0$. What is the y-intercept of this line?
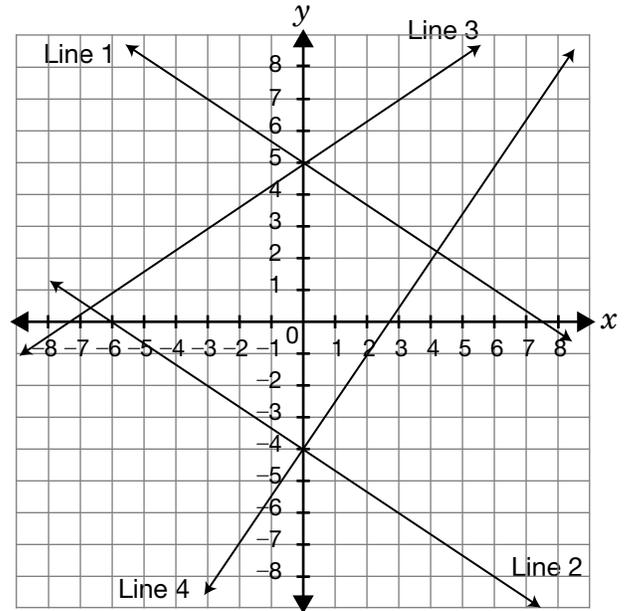
A -6

B -2

C 2

D 6

12 Imagine the graph for the relation $4x - 5y + 20 = 0$.

What is the **slope**?

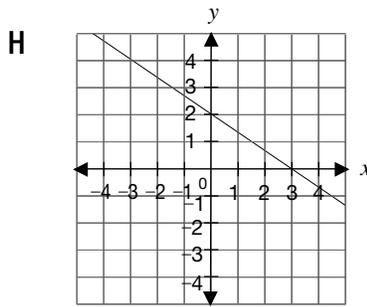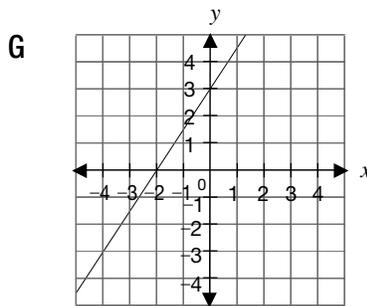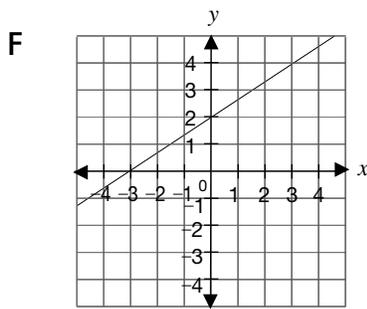**F** $\dfrac{4}{5}$

G $-\dfrac{4}{5}$

H $\dfrac{5}{4}$

J 4

13 The grid below shows the graphs of four linear relations.

Which of the following matches the line with its equation?

A Line 1: $y = -\dfrac{3}{2}x + 5$

B Line 2: $2x + 3y + 12 = 0$

C Line 3: $y = \dfrac{3}{2}x + 5$

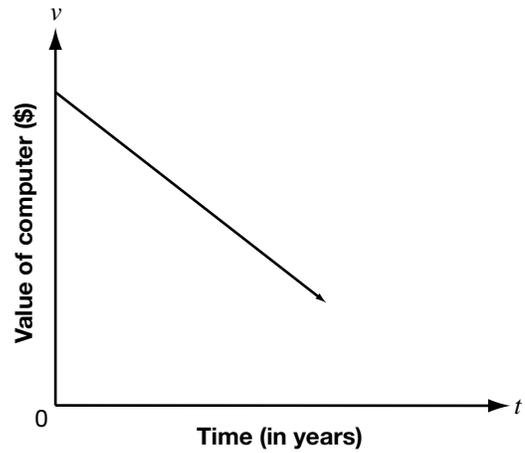**D** Line 4: $2x - 3y - 12 = 0$

14 Which **graph** represents the relation $y = \frac{2}{3}x + 2$?

F

G

H

J
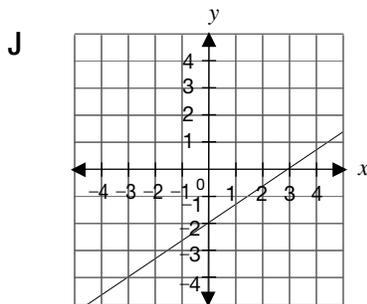
15 A computer decreases in value over time. The relationship between the value of the computer, v, in dollars after t years is written as the equation

$$v = -300t + 2100.$$
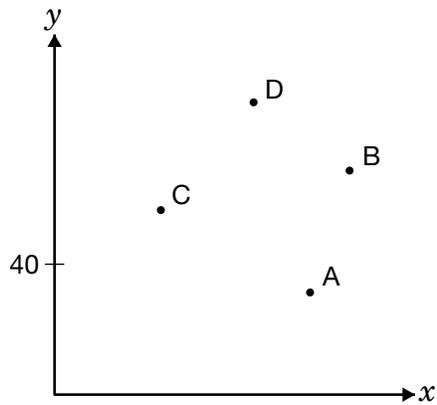
A line representing the relationship is graphed.

What does the v-intercept of the line represent?

A   The decrease in value per year

B   The initial value of the computer

C   The number of years until the value is $0

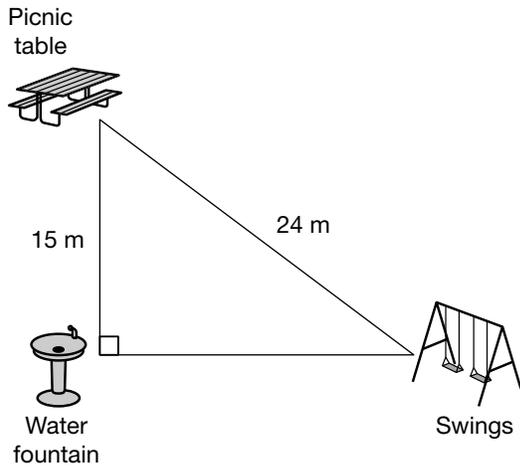D   The number of years the computer will work

16 **Lineup**

The line $y = \frac{1}{5}x + 50$ passes through only one pair of points below.

Which pair of points could the line pass through? Justify your response.

17 The positions of the water fountain, the picnic table and the swings at a local park are shown below.

Picnic table

15 m

24 m

Water fountain

Swings

The Pythagorean theorem was used to determine the distance, in metres, from the water fountain to the swings. Which of the following is closest to this distance?

A 28 m

B 19 m

C 15 m

D 9 m

18 Sand is being poured from one container to another, as shown below. The sand flows from the shaded part to the unshaded cone.

5 cm

4 cm

2 cm

h

6 cm
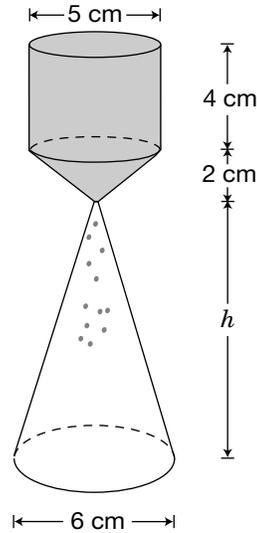
The shaded part starts full of sand. The sand empties into the unshaded cone and fills it to the top. What is the height of the unshaded cone?
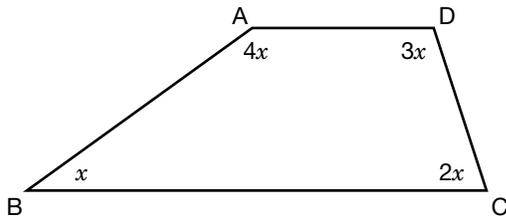
F 6.0 cm

G 8.3 cm

H 9.7 cm

J 12.5 cm

19　Brad has a cylindrical metal container that is open at the top. He wants to paint the outer surfaces of the container, including the bottom.

20 cm
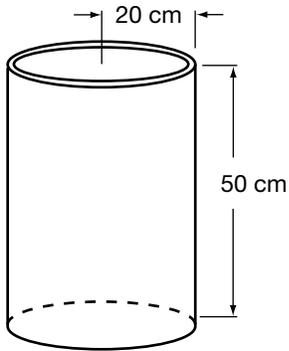
50 cm

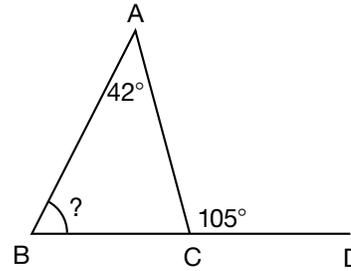Which expression should he use to calculate the area to be painted?

A　$\pi(20)(50)$ cm^2

B　$2\pi(20)(50)$ cm^2

C　$2(\pi(20)^2 + \pi(20)(50))$ cm^2

D　$(\pi(20)^2 + 2\pi(20)(50))$ cm^2

20　ABCD is a quadrilateral

A　　　　D
4x　　　3x

x　　　　　2x
B　　　　　　　C

What is the measure of ∠BAD?

F　108°

G　120°

H　132°

J　144°

21　In the figure, BC is extended to D. ∠BAC = 42° and ∠ACD = 105°.

A

42°

?　　　105°
B　　　C　　　D

What is the value of ∠ABC?

A　33°

B　42°

C　52°

D　63°

22 Pizza Puzzle

One weekend, a pizza shop offers two specials for the same price. The pizzas are all the same thickness.

FIBONACCI SPECIAL	GALILEO SPECIAL
Two Pizzas	One Pizza
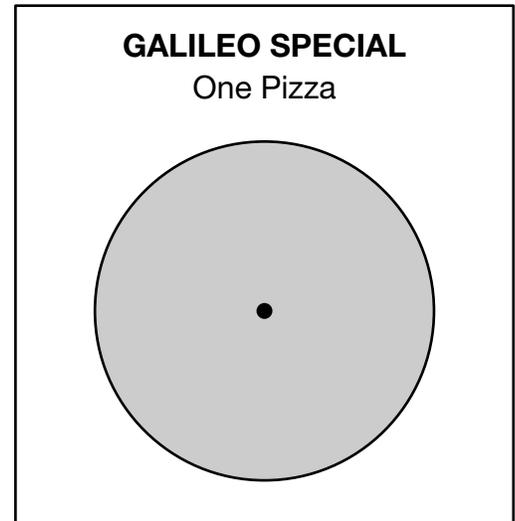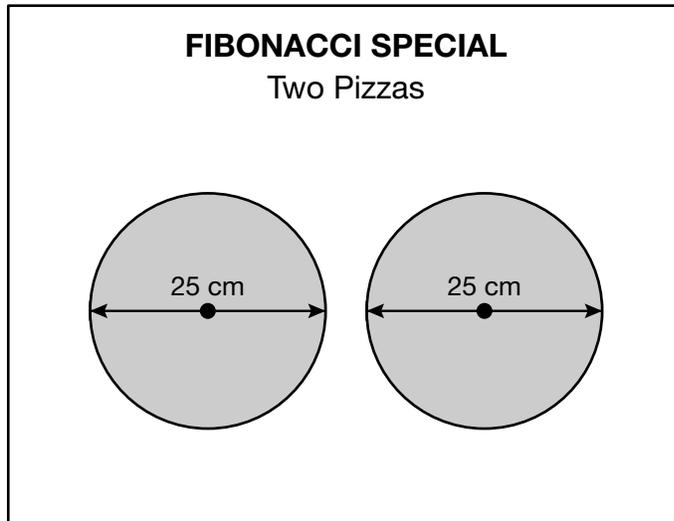
Determine the diameter of the Galileo Special if the two specials contain the same amount of pizza. Show your work.

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