

$$\frac{2.29}{500} = 0.00458 \text{ \$/mL}$$

1 A carton that holds 500 mL of chocolate milk costs \$2.29.

Which of the following containers has a lower cost per mL?

- a 250 mL at \$1.29
- b** 700 mL at \$3.09
- c 750 mL at \$3.59
- d 1000 mL at \$4.69

$$\frac{1.29}{250} = 0.00516 \text{ \$/mL}$$

$$\frac{3.09}{700} = 0.004414 \text{ \$/mL}$$

2 Which of the following fractions is not equivalent to $\frac{10}{30}$?

- a $\frac{2}{6}$
- b** $\frac{15}{35}$
- c $\frac{1}{3}$
- d $\frac{100}{300}$

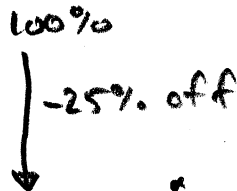
$$10 \div 30 = 0.3333333 \dots$$

$$2 \div 6 = 0.3333333 \dots$$

$$15 \div 35 = 0.428$$

3 Aidan is buying a new CD player. The CD player was selling for \$84.79 and now is on sale for 25% off. Which of the following is closest to the total cost of the CD player, including 15% sales tax?

- a \$54.05
- b \$63.59
- c** \$73.13
- d \$74.49



$$\begin{aligned} \text{SALE PRICE} &= 75\% \text{ of } 84.79 \\ &= 0.75 \times 84.79 \\ &= \$63.59 \end{aligned}$$

$$\begin{aligned} \text{PRICE INCL } 15\% \text{ TAX} &= 115\% \text{ of } 63.59 \end{aligned}$$

$$\begin{aligned} &= 1.15 \times 63.59 \\ &= \$73.13 \end{aligned}$$

4 What is the value of the expression

$$-1 + \frac{77}{100} ? \rightarrow = -0.23$$

a $-\frac{177}{100}$

$$= -1.77$$

b $-\frac{78}{100}$

$$= -0.78$$

c $-\frac{76}{100}$

$$= -0.76$$

d $-\frac{23}{100}$

$$= -0.23$$

5 The volume of a cylinder is 325 cm^3 . The height is 8.5 cm.

Which is closest to the measure of the radius?

Hint: $V = \pi r^2 h$

- a** 3.49 cm
- b 6.09 cm
- c 12.17 cm
- d 38.24 cm

$$\begin{aligned} V &= \pi (3.49)^2 (8.5) \\ &= 325 \text{ cm}^2 \end{aligned}$$

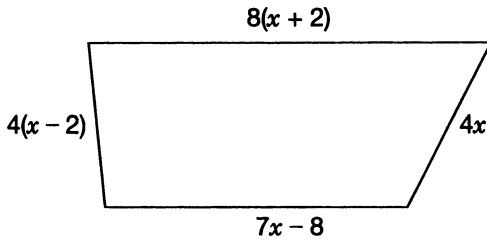
6 What is the solution to the equation $3x + 80 = 12x - 1$?

- a -27
- b -9
- c** 9
- d 27

$$\begin{aligned} 3x + 80 - 12x &= 12x - 1 - 12x \\ -9x + 80 &= -1 \\ -9x + 80 - 80 &= -1 - 80 \\ -9x &= -81 \\ \frac{-9x}{-9} &= \frac{-81}{-9} \\ x &= 9 \end{aligned}$$

7 Field Maintenance

A field in the shape of a trapezoid has a perimeter of 460 m. A fence is being built along the field's perimeter.



Determine the length of fencing needed for each side of the field.

Show your work.

$$8(x+2) + 4x + 7x - 8 + 4(x-2) = 460$$

$$\underline{8x} + 16 + \underline{4x} + \underline{7x} - 8 + \underline{4x} - 8 = 460$$

$$\frac{23x}{23} = \frac{460}{23}$$

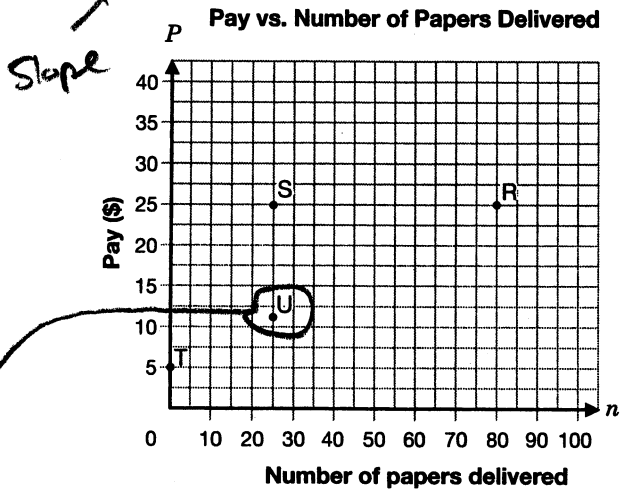
$$x = 20$$

∴ Length of fencing needed for each side are

$$\begin{array}{l} 8(20+2) \\ = 8(22) \\ = 176\text{m} \end{array}, \quad \begin{array}{l} 4x \\ = 4(20) \\ = 80\text{m} \end{array}, \quad \begin{array}{l} 7x-8 \\ = 7(20)-8 \\ = 140-8 \\ = 132\text{m} \end{array}, \quad \begin{array}{l} 4(x-2) \\ = 4(20-2) \\ = 4(18) \\ = 72\text{m} \end{array}$$



- 8 Mia delivers the local newspaper. Her base pay is \$5 per week and she gets \$0.25 per paper.



Which of the points on the graph represents Mia's pay for delivering 25 newspapers in a week?

- a Point R
- b Point S
- c Point T
- d Point U

$$y = mx + b$$

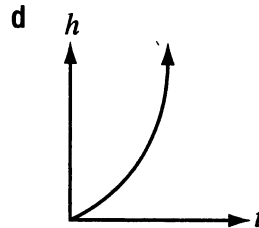
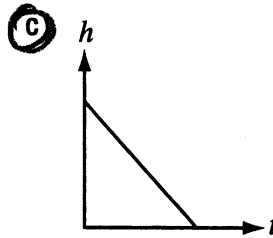
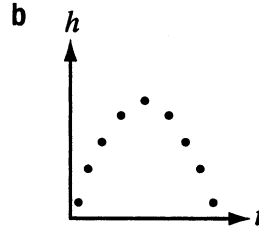
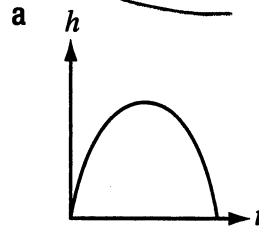
$$y = 0.25x + 5$$

$$y = 0.25(25) + 5$$

$$y = 6.25 + 5$$

$$y = 11.25$$

- 9 Which of the following graphs represents a linear relation?



- 10** Simon records the height of a plant each day for five days.

Plant Growth Over Five Days

Day	Height (cm)
0	4
1	5
2	7
3	10
4	14

$4-5 = -1$
 $5-7 = -2$ } non-linear

His chart shows that the relation between height and day

- a is a linear relation.
- b** is a non-linear relation.
- c has a constant rate of change.
- d has a decreasing rate of change.

- 11** Victoria is selling chocolate bars to raise money for her hockey team. She begins with 36 bars to sell and sells four bars per day.

Which of the following represents the relation between N , the number of chocolate bars remaining, and d , the number of days she has been selling?

- a $N = 36 + 4d$
- b $N = 36d - 4$

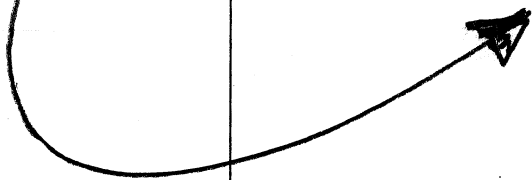
c

Day, d	Number of bars remaining, N	First differences
0	20	
1	24	4
2	28	4
3	32	4
4	36	4

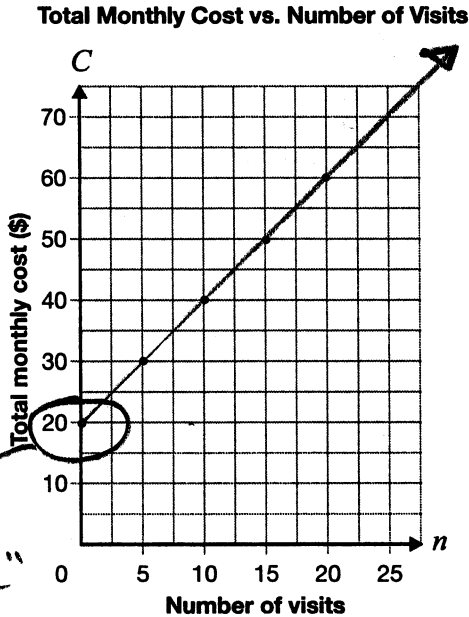
d

Day, d	Number of bars remaining, N	First differences
0	36	
1	32	-4
2	28	-4
3	24	-4
4	20	-4

Starts w/ 36
take 4 off each day



- 12** Tyler belongs to a fitness club at the community centre. The graph below represents the relationship between the number of times he visits the club and his total monthly cost.



"PARTIAL"
does not
start
at
zero

What type of variation is this relationship, and what is the initial value?

- a Direct variation, and initial value is 0
- b Partial variation, and initial value is 0
- c Direct variation, and initial value is 20
- d Partial variation, and initial value is 20

- 13** A tap is leaking into a pail. The height of the water in the pail is represented by the equation $h = 0.5t + 2$, where h represents the height of water in the pail, in cm, and t represents the amount of time the tap has been leaking, in minutes.

What is the height of water in the pail if the tap has been leaking for 56 minutes?

- a 28 cm
- b 30 cm
- c 108 cm
- d 114 cm

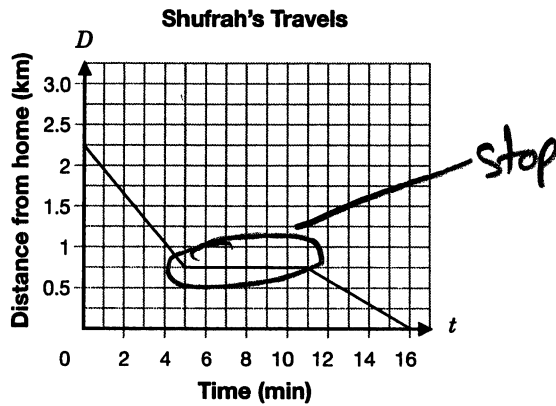
$$h = 0.5(56) + 2$$

$$h = 28 + 2$$

$$h = 30$$



- 14 The relationship between t , the number of minutes Shufrah travels, and D , the distance she is from home, is shown on the grid below.



Which of the following statements best describes the way Shufrah travels?

- a While travelling toward her home, Shufrah rides her bike, stops and then walks.
- b While travelling toward her home, Shufrah rides her bike, walks and then rides her bike. x
- c While travelling away from home, Shufrah rides her bike, stops and then walks. going toward home !!
- d While travelling away from home, Shufrah walks, rides her bike and then walks. x



15 Makin' a Profit!

Student council is planning a dance.

- The cost to hire a DJ is \$300.
- Tickets are sold at \$6 each.
- The profit is based on the amount received from the tickets sold minus the cost of the DJ.

Complete the table of values to show the profit based on the number of tickets sold.

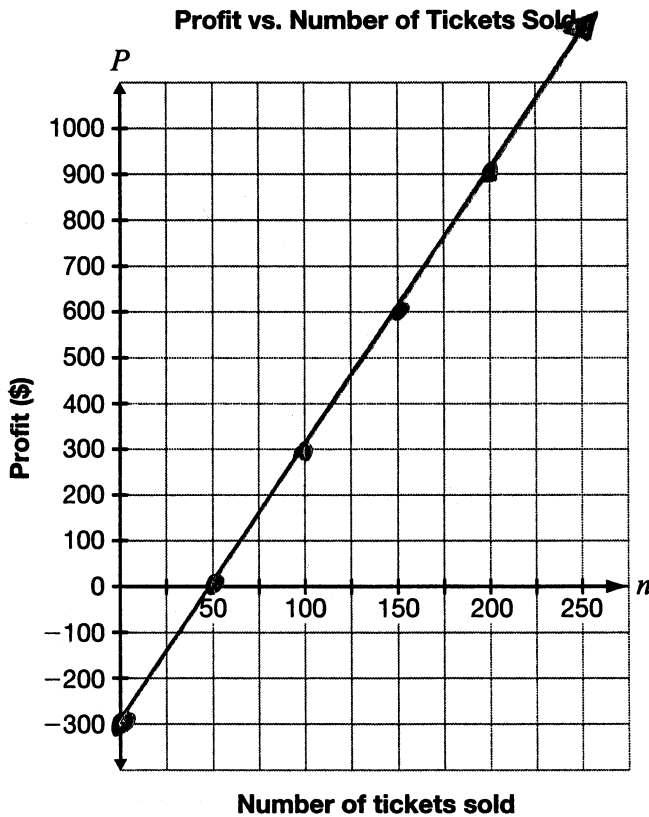
Profit from Ticket Sales

Number of tickets sold	Profit (\$)
0	-300
50	0
100	300
150	600
200	900

+ \$300
+ \$300
etc.

IF ZERO TICKETS ARE SOLD
THEY HAVE LOST \$300
EVERY 50 TICKETS SOLD
ADDS $50 \times \$6 = \300

Graph these data on the grid below.



16 Rockin' Radicals

The Radicals, a small high school band, recently signed a contract with a record label. Their earnings include a signing bonus plus an amount per CD sold, as shown in the table below.

Number of CDs	Band earnings (\$)
0	10 000
5 000	10 600
10 000	11 200
15 000	11 800
20 000	12 400

$$\begin{aligned} \text{or } \text{slope} &= \frac{\Delta y}{\Delta x} \\ &= \frac{10600 - 10000}{5000 - 0} \\ &= \frac{600}{5000} \\ &= 0.12 \end{aligned}$$

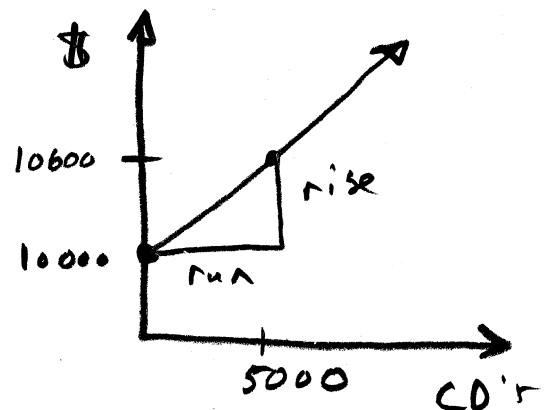
Determine the amount of the signing bonus and the amount they receive per CD.

Show your work.

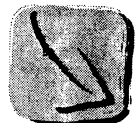
Their signing bonus is \$10000 since it's the amount they get for selling zero CD's

For amount received per CD find the slope of the line

$$\begin{aligned} \text{Slope} &= \frac{\text{rise}}{\text{run}} \\ &= \frac{600}{5000} \\ &= 0.12 \end{aligned}$$

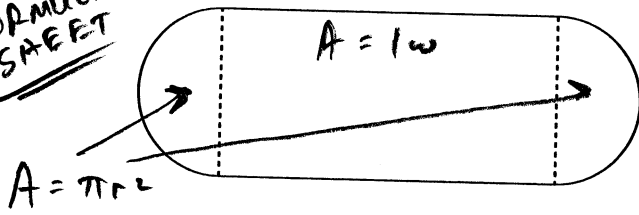


∴ They make \$0.12 per CD



- 17 Germaine wants to calculate the area of the shape shown below. It is composed of a rectangle and two semicircles.

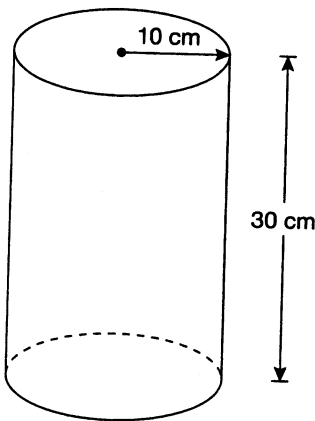
FROM FORMULA SHEET



Which of the following pairs of expressions should Germaine use to determine the area of the shape?

- a $2(l + w), \pi r^2$
- b $2(l + w), 2\pi r$
- c $lw, 2\pi r$
- d $lw, \pi r^2$

- 18 Silvia is making lemonade. She is using a cylindrical container with a radius of 10 cm and a height of 30 cm, as shown below.



FROM FORMULA SHEET

$$V = \pi r^2 h$$

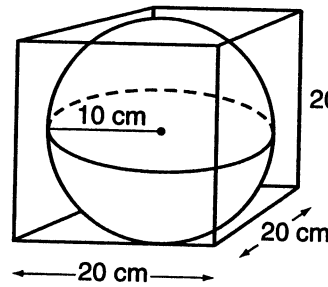
$$V = \pi (10)^2 (30)$$

$$V = 9425 \text{ cm}^3$$

Which of the following is closest to the volume of the container?

- a $37\,700 \text{ cm}^3$
- b 9425 cm^3
- c 1885 cm^3
- d 600 cm^3

- 19 A soccer ball is packaged in a cube-shaped box.



$$V_1 = lwh$$

$$V_1 = (20)(20)(20)$$

$$V_1 = 8000 \text{ cm}^3$$

$$V_2 = \frac{4\pi r^3}{3}$$

$$V_2 = \frac{4\pi (10)^3}{3}$$

Which is closest to the volume of the space in the package that is **not** occupied by the ball?

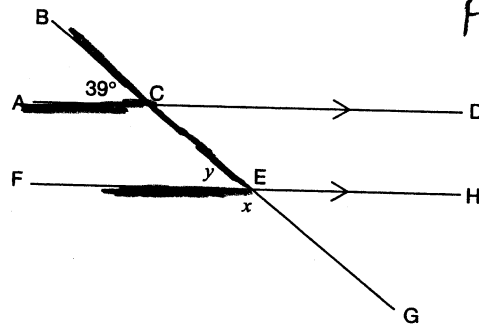
- a 3811 cm^3
- b 4000 cm^3
- c 4187 cm^3
- d 8000 cm^3

$$V = V_1 - V_2$$

$$= 8000 - 4189$$

$$= 3811$$

- 20 The measure of $\angle ACB$ is 39° .



"F" pattern

$$y = 39^\circ$$

$$x + y = 180^\circ$$

$$x = 180^\circ - 39^\circ$$

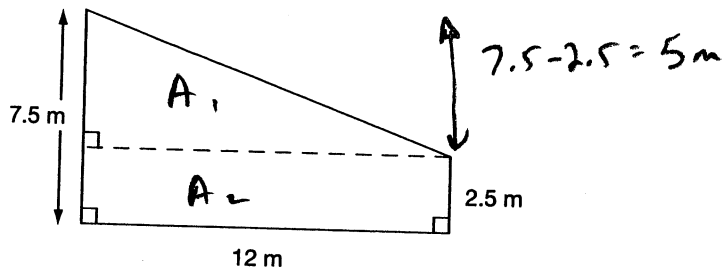
$$= 141^\circ$$

What are the values of x and y ?

- a $x = 39^\circ$ and $y = 141^\circ$
- b $x = 39^\circ$ and $y = 39^\circ$
- c $x = 141^\circ$ and $y = 141^\circ$
- d $x = 141^\circ$ and $y = 39^\circ$

21 Paint

Jackson is buying paint for his wall.



One litre of paint will cover 9 m^2 .

How many litres of paint does he need to cover the wall?

Justify your answer.

$$A_1 = \frac{bh}{2}$$

$$A_2 = lw$$

$$A_1 = \frac{(12)(5)}{2}$$

$$A_2 = (12)(2.5)$$

$$A_1 = 30 \text{ m}^2$$

$$A_2 = 30 \text{ m}^2$$

$$\begin{aligned} A_{\text{TOTAL}} &= A_1 + A_2 \\ &= 30 + 30 \\ &= 60 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \therefore \text{number of litres needed is } & \frac{60}{9} \\ &= 6.7 \end{aligned}$$