

# Sample Assessment Booklet: New Layout

## Booklet 1

# QUESTIONS

Grade 9 Assessment of Mathematics • Academic

2015

---

**Follow along as your teacher reads the instructions below.**

---

Along with this booklet, make sure you have *Answer Booklet 1* and the Formula Sheet.

You may use any space in this book for rough work for multiple-choice questions only.

**Note:**

The diagrams in these booklets are **not** all drawn to scale.

The use of cellphones, audio- or video-recording devices, digital music players or e-mail or text messaging devices during the assessment is prohibited.

**No work in this booklet  
will be scored.**

Education Quality and  
Accountability Office

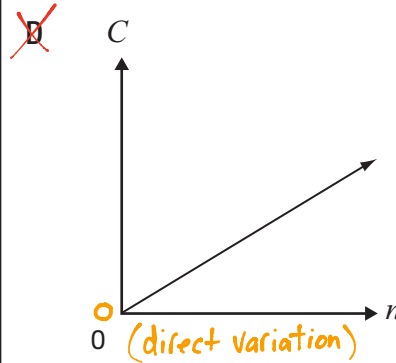
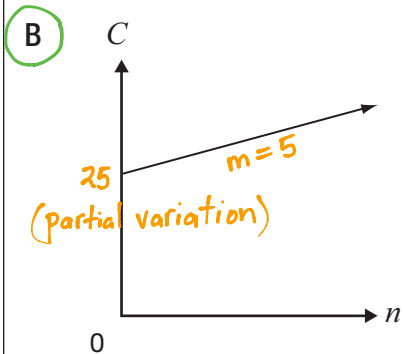
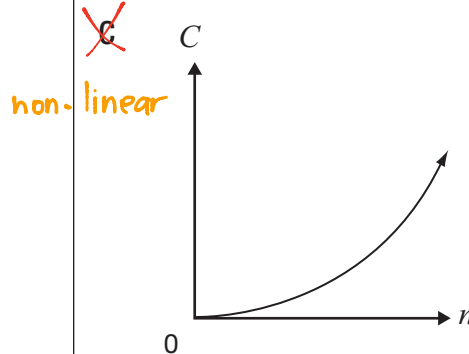
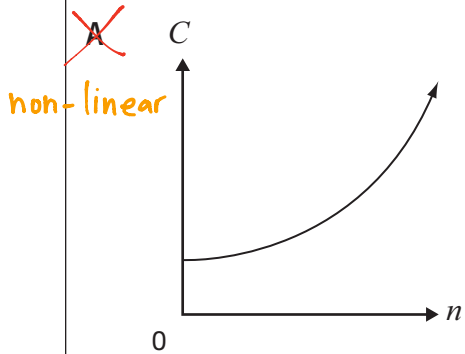


Continue to follow along as your teacher  
reads the directions on the cover of  
*Answer Booklet 1*.



Remember to write your answers in your *Answer Booklet 1*.

- 1** The total yearly cost of a museum membership is made up of a fee of \$25, plus \$5 per visit. Which graph best represents the relationship between total yearly cost,  $C$ , and number of visits,  $n$ ?



**2** A cellphone company offers four choices for purchasing talk time.

Which of the following has the lowest **cost** per **minute**?

- F 200 minutes for \$24.50      $24.50 \div 200 = 0.1225$
- G 550 minutes for \$68.00      $68.00 \div 550 = 0.1236$
- H 700 minutes for \$80.25**      $80.25 \div 700 = 0.1146$
- J 850 minutes for \$99.50      $99.50 \div 850 = 0.1171$

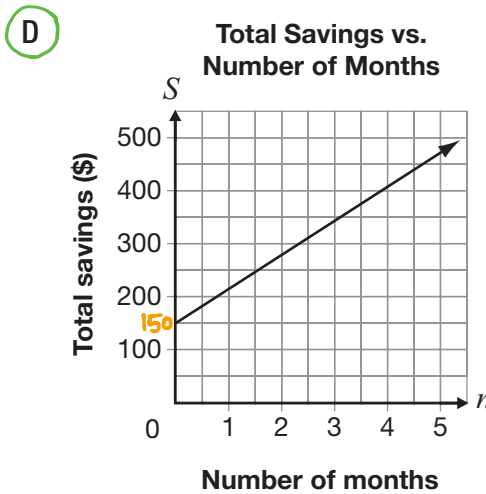
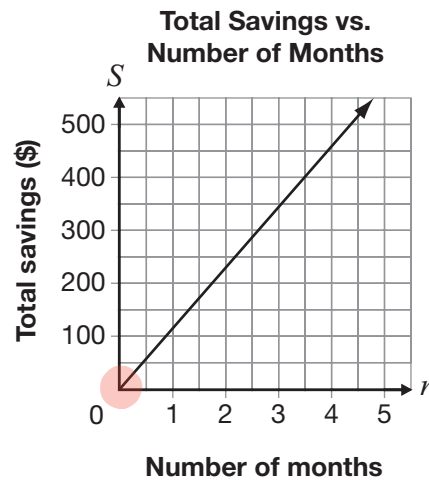
**3** The table below shows information about the **linear relationship** between Ben's total savings and the number of months he saves money.

Number of months, $n$	Total savings, $S$ (\$)
0	150
3	345
6	540
9	735
12	930

$m = \frac{540 - 345}{6 - 3}$   
 $= \frac{195}{3}$   
 $= 65$

Which of the following represents this relationship?

- ~~A~~  $S = 65n + 345$
- ~~B~~  $S = 195n + 150$
- ~~C~~



- 4** Jared uses the equation  $C = 30n$  to determine the cost,  $C$ , in dollars, for renting a car for  $n$  days, where  $n$  is a whole number.

If Jared can spend a maximum of \$200 on the rental, which of the following describes the possible values of  $n$ ?

- F 7, 8, 9, ...  
 G 6, 7, 8, 9, ...  
**H 0, 1, 2, 3, 4, 5, 6**  
 J 0, 1, 2, 3, 4, 5, 6, 7

$$\text{Let } C = 200$$

$$\frac{200}{30} = \frac{30n}{30}$$

$$6\frac{2}{3} = n$$

$\therefore$  Jared will only have enough money for 6 whole days.

- 5** What goes in the  $\square$  to complete the equation below?

$$\frac{(8x^3)(\square)}{8x^3} = \frac{24x^{12}}{8x^3}$$

**A**  $3x^9$

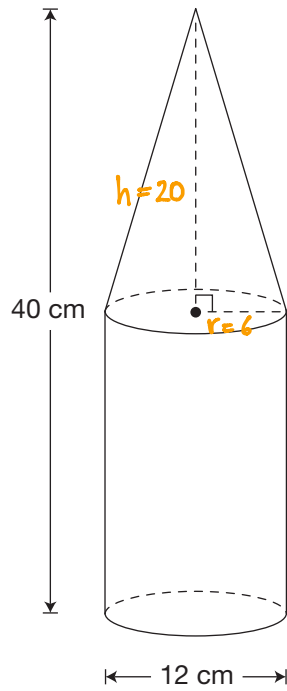
B  $3x^4$

C  $16x^9$

D  $16x^4$

$$\square = 3x^9$$

- 6 The container pictured below is made up of a cone and a cylinder. The cone and the cylinder have the same height.

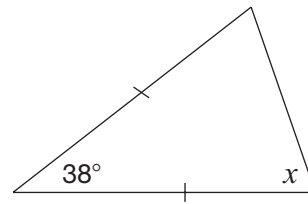


Which of the following is closest to the volume of the container?

- F 2261 cm<sup>3</sup>
- G 3016 cm<sup>3</sup>
- H 3393 cm<sup>3</sup>
- J 4524 cm<sup>3</sup>

$$\begin{aligned}
 V_{\text{container}} &= V_{\text{cylinder}} + V_{\text{cone}} \\
 &= \pi r^2 h + \frac{\pi r^2 h}{3} \\
 &= \pi (6)^2 (20) + \frac{\pi (6)^2 (20)}{3} \\
 &= \pi (36)(20) + \frac{\pi (36)(20)}{3} \\
 &= 720\pi + 240\pi \\
 &= 960\pi \\
 &\approx 3015.9
 \end{aligned}$$

- 7 What is the value of  $x$  in the diagram below?



- A 38°
- B 71°
- C 104°
- D 161°

$$\begin{aligned}
 x &= \frac{180^\circ - 38^\circ}{2} \\
 &= 71^\circ
 \end{aligned}$$



Go to *Answer Booklet 1* and complete the four open-response questions before continuing with question 12.

**8** Open-Response

**9** Open-Response

**10** Open-Response

**11** Open-Response

**12** The equation of a line is  $5x - 2y + 10 = 0$ .

Which of the following expresses this equation in the form  $y = mx + b$ ?

**F**  $y = \frac{5}{2}x + 5$

**G**  $y = \frac{5}{2}x + 10$

**H**  $y = -\frac{5}{2}x + 5$

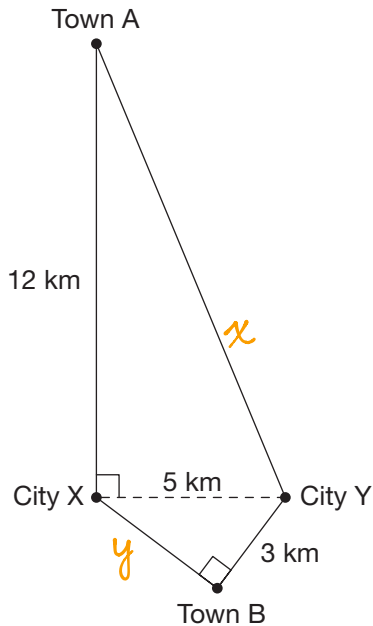
**J**  $y = -\frac{5}{2}x + 10$

$$5x - 2y + 10 = 0$$

$$\frac{-2y}{-2} = \frac{-5x - 10}{-2}$$

$$y = \frac{5}{2}x + 5$$

- 13** The 5 km of highway between City X and City Y is closed. There are two possible detour routes: one through Town A and one through Town B, as shown in the diagram below.



How much shorter is the detour through Town B than the detour through Town A?

- A 7 km
- B 9 km
- C 16 km
- D 18 km**

$$\begin{aligned}
 x^2 &= 12^2 + 5^2 & y^2 &= 5^2 - 3^2 \\
 &= 144 + 25 & &= 25 - 9 \\
 &= 169 & &= 16 \\
 x &= \sqrt{169} & y &= \sqrt{16} \\
 &= 13 & &= 4
 \end{aligned}$$

Town A Detour - Town B detour

$$\begin{aligned}
 &= (12+13) - (4+3) \\
 &= 25 - 7 \\
 &= 18
 \end{aligned}$$

- 14** Which of the following shows data from a **non-linear** relation?

~~F~~

$n$	$P$
1	8
2	5
3	2
4	-1

$5 - 8 = -3$   
 $2 - 5 = -3$   
 $-1 - 2 = -3$

Linear

~~G~~

$n$	$P$
5	3.25
10	4.00
15	4.75
20	5.50

$4 - 3.25 = 0.75$   
 $4.75 - 4 = 0.75$   
 $5.5 - 4.75 = 0.75$

Linear

~~H~~

$n$	$P$
2	8
4	$8\frac{1}{3}$
6	$8\frac{2}{3}$
8	9

$8\frac{1}{3} - 8 = \frac{1}{3}$   
 $8\frac{2}{3} - 8\frac{1}{3} = \frac{1}{3}$   
 $9 - 8\frac{2}{3} = \frac{1}{3}$

Linear

**J**

$n$	$P$
3	25
6	16
9	9
12	4

$16 - 25 = 9$   
 $9 - 16 = 7$   
 $4 - 9 = 5$

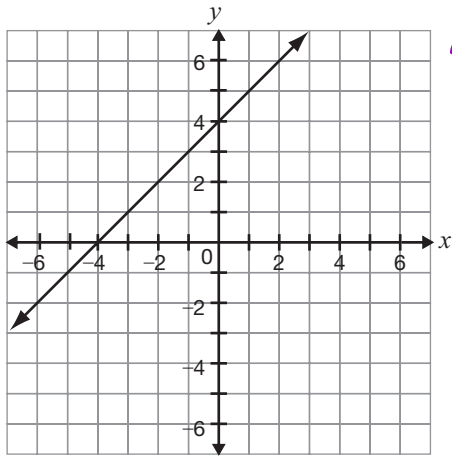
Non-Linear

15 Consider the line represented by the equation  $y = 3x + 2$ .   
 $\rightarrow$   $y$ -intercept = 2   
 $\rightarrow$  slope = 3

A new line is formed by decreasing the slope and increasing the  $y$ -intercept.

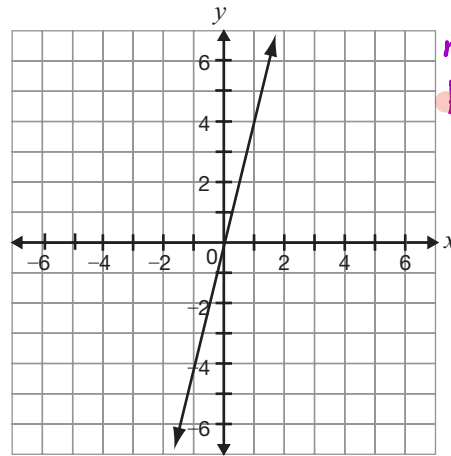
Which of the following could be the graph of the new line?

A



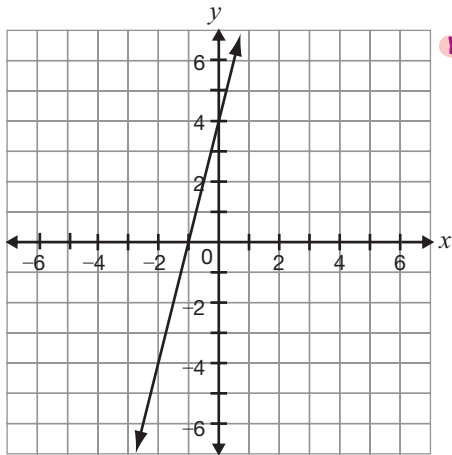
$m = 1$   
 $b = 4$

~~C~~



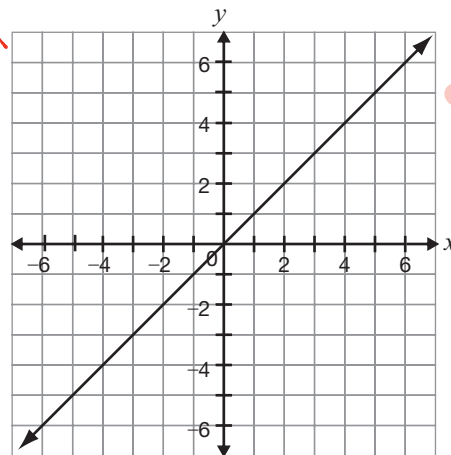
$m = 4$   
 $b = 0$

~~B~~



$m = 4$   
 $b = 4$

~~D~~



$m = 1$   
 $b = 0$



- 16** The sum of the interior angles of a polygon is  $2700^\circ$ .

How many sides does the polygon have?

F 19

**G 17**

H 15

J 13

$$i = (n-2)180$$

$$\frac{2700}{180} = \frac{(n-2)180}{180}$$

$$15 = n-2$$

$$17 = n$$

- 17** Gertrude sells shoes.

Her total pay each week is made up of a **base salary** and a commission of **15% of her sales that week**.

One week, her total pay is \$167.50 and she has \$850 in sales.

Which equation below represents the relationship between her total pay,  $P$ , each week and sales,  $s$ ?

~~A~~  $P = 15s$  (no base salary)

**B**  $P = 40 + 0.15s$

~~C~~  $P = 850 + 0.15s$  (\$850 is not the base salary)

D  $P = 167.50 + 0.15s$

$$P = 0.15s + b$$

$$\text{Let } P = 167.5 \text{ and } s = 850$$

$$167.5 = 0.15(850) + b$$

$$167.5 = 127.5 + b$$

$$40 = b$$

- 18** What is the value of  $x$  in the equation

$$-4(2x - 1) = 36?$$

$$-8x + 4 = 36$$

$$\frac{-8x}{-8} = \frac{32}{-8}$$

$$x = -4$$

**F -4**

G  $-\frac{35}{8}$

H  $-\frac{37}{8}$

J -5

or...

$$\frac{-4(2x-1)}{-4} = \frac{36}{-4}$$

$$2x - 1 = -9$$

$$\frac{2x}{2} = \frac{-8}{2}$$

$$x = -4$$



# STOP

You have finished Booklet 1.

**Education Quality and  
Accountability Office**



2 Carlton Street, Suite 1200, Toronto ON M5B 2M9  
Telephone: 1-888-327-7377 Web site: [www.eqao.com](http://www.eqao.com)

© 2015 Queen's Printer for Ontario