

# Applied

## Grade 9 Assessment of Mathematics

Spring 2007

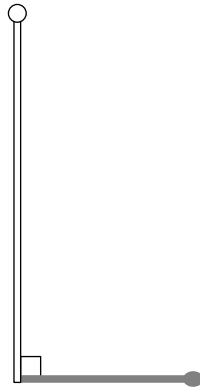
### **SAMPLE ASSESSMENT QUESTIONS**

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

- 1** On a sunny day, a flagpole that is 5 m tall casts a shadow that is 2.4 m long, as shown below. At the same time, a tree next to the flagpole casts a shadow that is 3.6 m long.



Which of the following proportions can be used to determine  $h$ , the height of the tree, correctly?

- A  $\frac{2.4}{5} = \frac{3.6}{h}$   
 B  $\frac{2.4}{5} = \frac{h}{3.6}$   
 C  $\frac{5}{6.0} = \frac{3.6}{h}$   
 D  $\frac{h}{5} = \frac{2.4}{6.0}$
- 2** DJ Kool is a disc jockey who charges the same amount for each hour. For a 4-hour dance, he charges \$522.00. How much does DJ Kool charge for a 7-hour dance?
- F \$298.29  
 G \$913.50  
 H \$2088.00  
 J \$3654.00

- 3** Alex makes necklaces using coloured beads. The ratio of blue beads to red beads is 3:4, and the ratio of red beads to yellow beads is 4:1.

Alex makes a necklace using a total of 48 beads in the ratios given above. How many yellow beads will she need?

- A 1  
 B 4  
 C 6  
 D 8

- 4** Which of the following expressions is equal to 49?

- F  $(4 + 3)^2$   
 G  $4 + 3^2$   
 H  $(3 + 4)^2$   
 J  $3^2 + 4^2$

- 5** Herman uses his scientific calculator to determine the value of the expression

$$\frac{4}{3}\pi(3.5)^3.$$

What is the **approximate** value of this expression?

- A 175.0  
 B 175.1  
 C 179.0  
 D 179.6

- 6** Ivan shows his steps in solving the following equation for  $x$ :

$$2x + 3 = 7$$

Step 1:  $2x + 3 - 3 = 7 - 3$

Step 2:  $2x = 4$

Step 3:  $x = 4 \times 2$

Step 4:  $x = 8$

In which step has Ivan made an **error**?

**F** Step 1

**G** Step 2

**H** Step 3

**J** Step 4

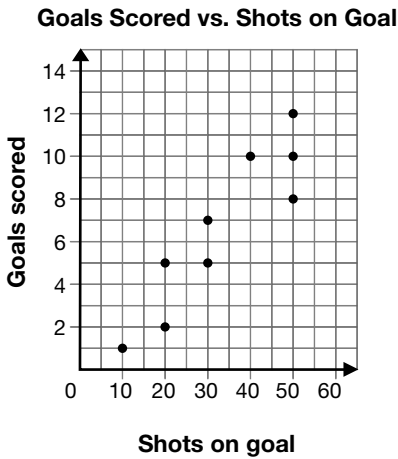
**7 Trip Planning**

The Lucas family is going on a trip to Manitoba and back. It is 1624 km from home to Manitoba.

Determine the total cost of the gas for the Lucas family's trip to Manitoba and back, if the cost of gas is 83¢ per litre and the car uses 9.7 litres per 100 kilometres.

Show your work.

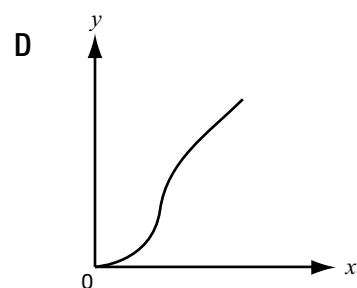
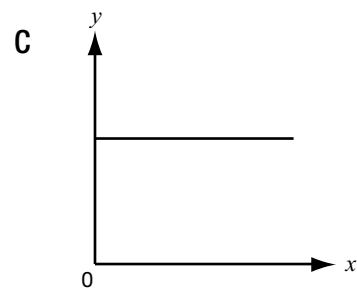
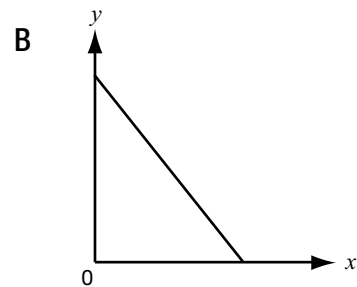
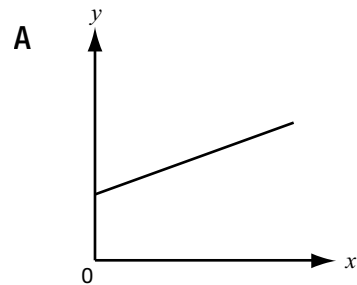
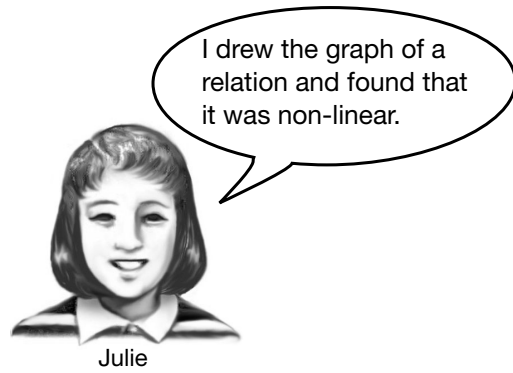
- 8** The scatter plot below shows the number of goals scored versus shots on goal by different members of a soccer team during the course of a season.



What relationship is shown in the scatter plot?

- F** There is no relationship between shots on goal and the number of goals scored.
- G** The number of goals scored decreases as the number of shots on goal increases.
- H** The number of goals scored increases as the number of shots on goal increases.
- J** The number of goals scored stays the same no matter how many shots on goal are taken.

- 9** Which graph does Julie draw?



**10** Which table shows a linear relationship between  $x$  and  $y$ ?

**F**

$x$	$y$
1	1
2	4
3	9
4	16

**G**

$x$	$y$
1	2
2	4
3	8
4	16

**H**

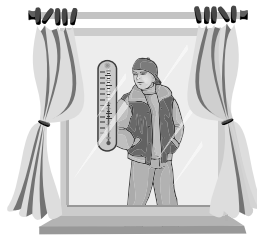
$x$	$y$
1	10
2	20
3	30
4	40

**J**

$x$	$y$
1	10
2	100
3	1000
4	10000

**11** One spring afternoon, Michael records the outside temperature every hour in the table below.

Time (h)	Temperature ( $^{\circ}\text{C}$ )
12	9.3
13	11.7
14	14.1
15	16.5
16	18.9
17	21.3



What is the **rate of change** of the temperature in relation to time?

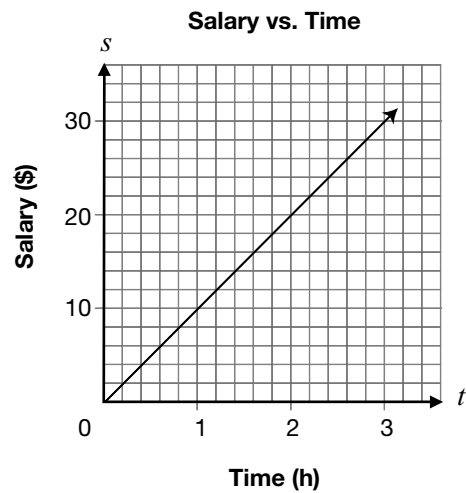
- A 2.4  $^{\circ}\text{C}/\text{h}$
- B 2  $^{\circ}\text{C}/\text{h}$
- C 0.9  $^{\circ}\text{C}/\text{h}$
- D 0.42  $^{\circ}\text{C}/\text{h}$

- 12** The equation  $P = 1.2 + 0.06n$  represents the relationship between  $P$ , the total printing cost, in dollars, and  $n$ , the number of advertisements printed.

Which of the following statements is true about this relationship?

- F The flat fee to print is \$0.06.
- G The printing cost per advertisement is \$1.20.
- H The flat fee to print is \$1.26.
- J The printing cost per advertisement is \$0.06.

- 13** The graph below represents the relationship between Jackie's salary,  $s$ , and the length of time she works,  $t$ .



What is Jackie's **salary** when she works 8 h?

- A \$40
- B \$80
- C \$120
- D \$125

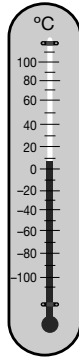
14 The formula

$$B = 100 - \frac{h}{156}$$

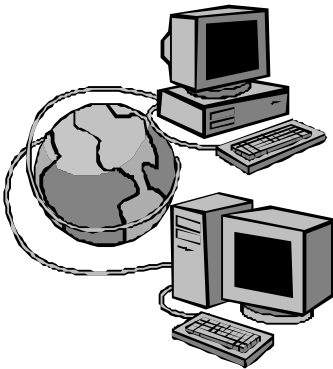
gives water's boiling point,  $B$ , in degrees Celsius at an altitude of  $h$  metres.

What is the approximate **boiling point of water** at an altitude of 5951 m?

- F 38 °C
- G 62 °C
- H 96 °C
- J 156 °C



15 Internet Plus charges a **base fee** of \$14 **each month**, and \$0.08 **per minute**.



For how many minutes did Harpreet use the Internet if he is charged \$42 for a month?

- A 350 min
- B 511 min
- C 525 min
- D 700 min

**16 Up in the Air**

Madiha throws a ball into the air one time. The height of the ball above ground is measured at six different times. The table below shows the data that Madiha collects.

**Height vs. Time**

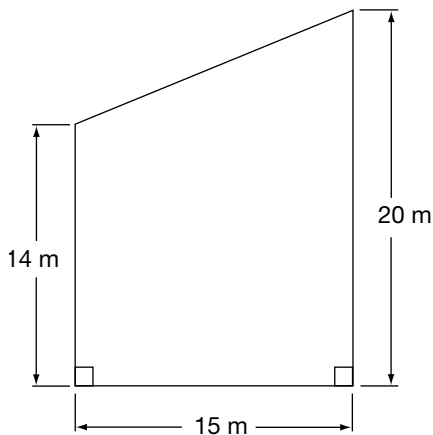
Time (sec)	Height (m)
0	1.6
0.5	7.9
1.0	11.7
1.5	13.0
2.0	11.8
2.5	8.1

Determine whether the relationship represented by the table is linear or non-linear. Justify your answer.

- 17** A lawn care company charges its customers based on the size of the lawn. The company uses the following schedule.

Area of lawn	Cost per month
Less than 200 m <sup>2</sup>	\$50
Between 200 m <sup>2</sup> and 250 m <sup>2</sup>	\$60
Between 250 m <sup>2</sup> and 300 m <sup>2</sup>	\$70
Over 300 m <sup>2</sup>	\$80

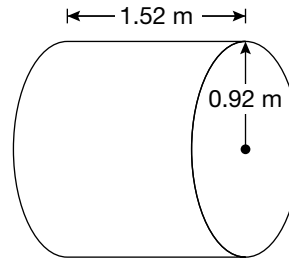
The company is caring for Denton's lawn, which has the dimensions shown.



How much should Denton be paying per month?

- A \$50
- B \$60
- C \$70
- D \$80

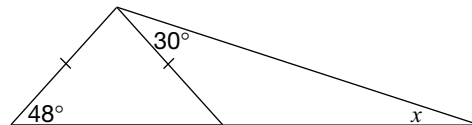
- 18** An oil tank shaped like a cylinder has a radius of 92 cm and a length of 152 cm, as shown below.



Which of the following is closest to the volume of the oil tank?

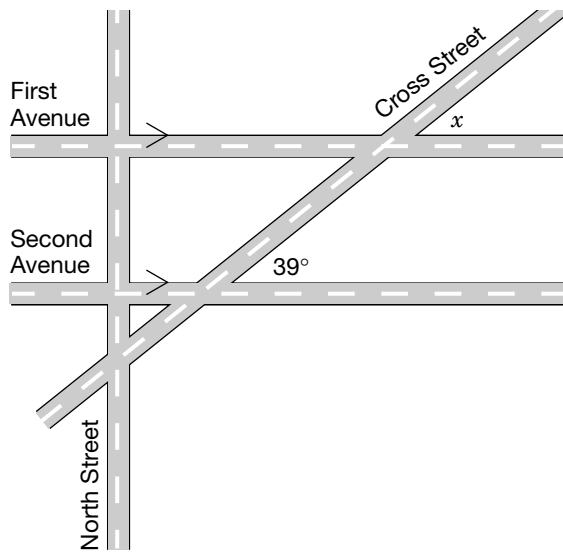
- F 0.09 m<sup>3</sup>
- G 0.14 m<sup>3</sup>
- H 4.0 m<sup>3</sup>
- J 12.7 m<sup>3</sup>

- 19** Determine the value of  $x$ .



- A  $x = 18^\circ$
- B  $x = 30^\circ$
- C  $x = 48^\circ$
- D  $x = 78^\circ$

- 20** In the map below, First Avenue and Second Avenue are parallel.

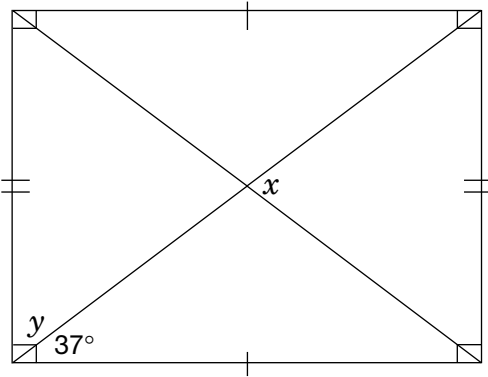


What is the value of  $x$ ?

- F  $321^\circ$
- G  $141^\circ$
- H  $51^\circ$
- J  $39^\circ$

**21 Deck Boards**

Sonya is building a rectangular deck in her backyard. The deck will have support beams running through the centre, making 4 isosceles triangles, as shown below.



Determine the values of  $x$  and  $y$ . Justify your answers.

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