

# Academic

## Grade 9 Assessment of Mathematics

Polynomials and Equations  
Practice Materials



Education  
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Office

- 1** Four students try to solve the equation  $5x - 3 = 2x + 9$ .

The following table shows part of each student's solution.

Nadine	$-12 = 3x$
Paul	$-3x = 6$
Joseph	$6 = 3x$
Michelle	$3x = 12$

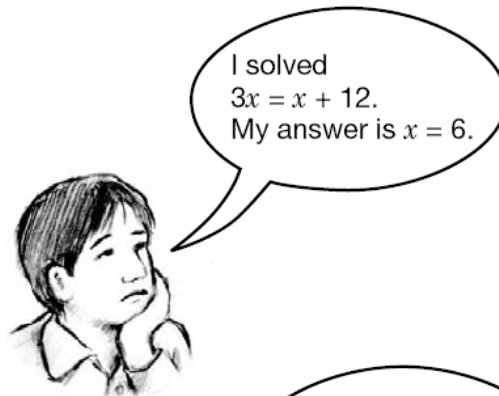
Which student is correct?

- A Nadine
- B Paul
- C Joseph
- D Michelle

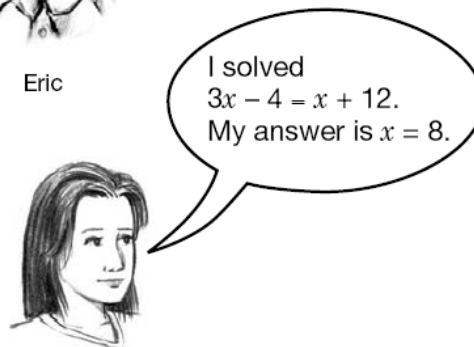
- 2** Which of the following represents the expression  $3(2x + 1) - 3(5x - 4)$  in a simplified form?

- A  $-9x - 9$
- B  $9x - 3$
- C  $-9x + 15$
- D  $-21x - 3$

- 3** Eric and Julie are each asked to solve an equation.



Eric



Julie

Who has correctly solved his or her equation?

- F Eric only
- G Julie only
- H Both Eric and Julie
- J Neither of them

- 4 Determine the value of  $x$  in the following equation:

$$\frac{2x}{3} + 4 = 3$$

- A  $-\frac{2}{3}$   
 B  $-\frac{3}{2}$   
 C  $-\frac{9}{2}$   
 D  $\frac{21}{2}$

- 5 The cost,  $C$ , in dollars to print leaflets,  $n$ , is given by the formula

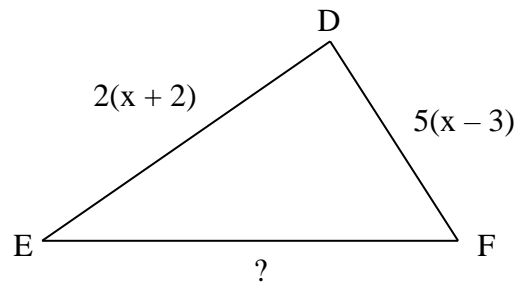
$$C = 35 + 0.03n.$$



What is the cost of printing 900 leaflets?

- A \$27.00  
 B \$35.00  
 C \$37.70  
 D \$62.00

- 6 The perimeter of triangle DEF is given by the expression  $11x - 15$ .



Which expression shows the correct length of side EF?

- A  $4x - 4$   
 B  $4x - 14$   
 C  $7x - 1$   
 D  $7x - 11$

- 7 Which value of  $x$  satisfies the equation  $5 - 2x = 9$ ?

- F  $x = -7$   
 G  $x = -2$   
 H  $x = 2$   
 J  $x = 3$

8

**Marc's Measurements**

Marc wants to investigate the relationship between a person's foot length and their height. He measures the foot length ( $L$ ) and height ( $h$ ) of each of the students in his class.

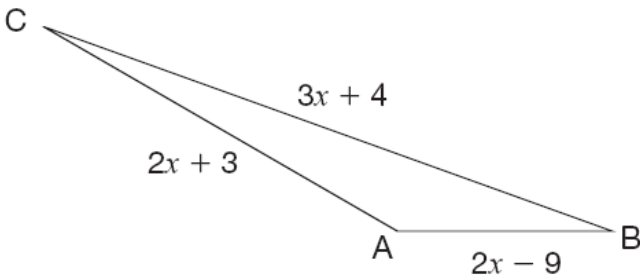
He discovers that the relationship can be represented by the equation  $L = \frac{2}{5} + \frac{3}{20}h$ .

Determine how tall a person would be if their foot length is **25 cm**.

Show your work.

**9 What Side?**

The perimeter of the triangle below is **75 m**.



Determine the measure of each side of the triangle.

Show your work.

**10** Measuring Mass

The following table shows an expression for the mass of each of the four members of the Miller family.

Member of the Miller Family	Mass (kg)
Father	$4x + 6$
Mother	$3x - 2$
Daughter	$2x - 6$
Son	$x + 7$

The total mass of all four members of the Miller family is **255 kg**.

What is the Mother's mass, in kg?

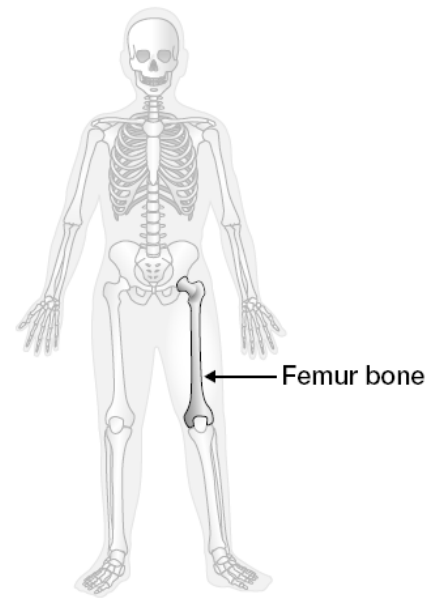
**11 Bone Business**

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

$$h = 69.09 + 2.24 f$$

According to the formula, what is the length of the femur in a person who is **178 cm** tall?

Show your work.



- 12** Which of the following is equivalent to the expression below?

$$-5 + 2(3x - 4) - 1$$

- A**  $-9x + 11$   
**B**  $-9x - 5$   
**C**  $6x - 10$   
**D**  $6x - 14$

- 13** Issam's father gave him a box of chocolate bars. Solve the following equation to determine how many chocolate bars he received.

$$\frac{n}{3} + 8 = \frac{3}{2}(n - 1) + \frac{1}{6}$$

How many chocolate bars did Issam receive?

- A** 4  
**B** 6  
**C** 8  
**D** 39

- 14** 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

- 15** The maximum number of tickets that can be sold for a school play is 350.

The total profit earned,  $P$ , can be determined using the equation  $P = 4.50n - 1080$ , where  $n$  is the total number of tickets sold.

Which of the following statements is true?

- A** The maximum profit is \$1080  
**B** The maximum profit is \$1757.  
**C** The total profit is \$0 when 240 tickets are sold.  
**D** The total profit is \$0 when 350 tickets are sold.



- 16** The cost of a field trip,  $C$ , as a function of the number of students on the trip,  $n$ , is represented by the equation:

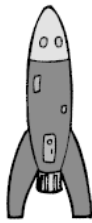
$$C = 500 + 15n$$

How many students went on the field trip if the cost was \$1025?

- A 15875 students
- B 102 students
- C 69 students
- D 35 students

- 17** While experimenting with a toy rocket, Dan determines that he can model the rocket's height,  $h$ , in metres, with respect to time,  $t$ , in seconds, using the equation

$$h = \frac{1}{2}t^2$$



Which calculation correctly finds the value of  $h$  when  $t = 10$ ?

- |   |  |
|---|--|
| <p><b>a</b> <math>h = \frac{1}{2} \times 10^2</math><br/> <math>= 5^2</math><br/> <math>= 25</math></p>                   | <p><b>c</b> <math>h = \frac{1}{2} \times 10^2</math><br/> <math>= \frac{1}{2} \times 100</math><br/> <math>= 50</math></p> |
| <p><b>b</b> <math>h = \frac{1}{2} \times 10^2</math><br/> <math>= \frac{1}{2} \times 20</math><br/> <math>= 10</math></p> | <p><b>d</b> <math>h = \frac{1}{2} \times 10^2</math><br/> <math>= \frac{1}{4} \times 100</math><br/> <math>= 25</math></p> |

- 18** Arlene correctly solved one of the following equations and got an answer of  $x = 12$ . Which equation did she solve?

- A  $2x - 3 = 27$
- B  $\frac{x}{4} + 1 = 47$
- C  $5x^2 + 6 = 726$
- D  $3(2x - 5) = 5(x - 1)$

Answers

- 1] D
- 2] C
- 3] H
- 4] B
- 5] D
- 6] A
- 7] G
- 8] 164 cm
- 9] 25 cm, 37 cm, 13 cm ( $x = 11$ )
- 10] 73 kg ( $x = 25$ )
- 11] 48.62 cm
- 12] D
- 13] C
- 14] J
- 15] C
- 16] D
- 17] C
- 18] C

