Rosary School \ Marj Elhamam

Name : _____ Date : / 11 / 2025

Subject: Worksheet 3/ Unit 3 Grade : 6 ( )

➢ 3.1 Simplifying algebraic expressions

Q1. Simplify each expression by combining like terms.

a. $4x + 7x =$ _____

b. $5a + 3a =$ _____

c. $9y - 4y =$ _____

d. $12m + 8n + 3m =$ _____

e. $6p + 2p + 10 =$ _____

f. $8k - 5k + 12 =$ _____

g. $11a + 6b - 4a + 2b =$ _____

h. $4a + 9 + 6a - 3 =$ _____

i. $7y + 3 - 4y + 5 =$ _____

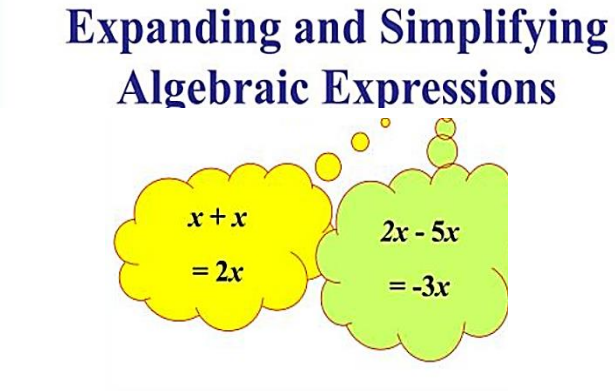
j. $4a \times 5a =$ _____

k. $6m \times -2m =$ _____

l. $x \times 11 \times y =$ _____

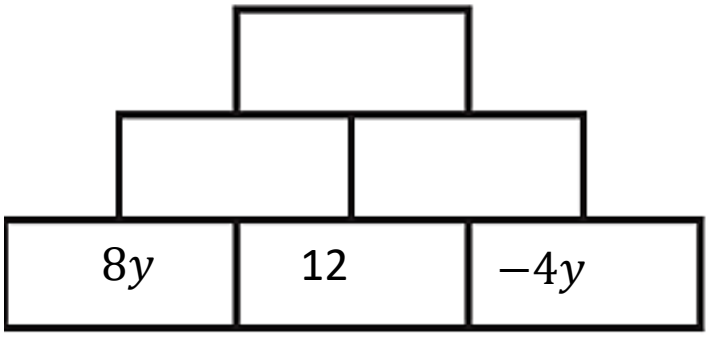
m. $5 \times y \times x =$ _____

n. $2 \times x \times 4 \times y =$ _____



Q2. Complete these addition pyramids.

a.



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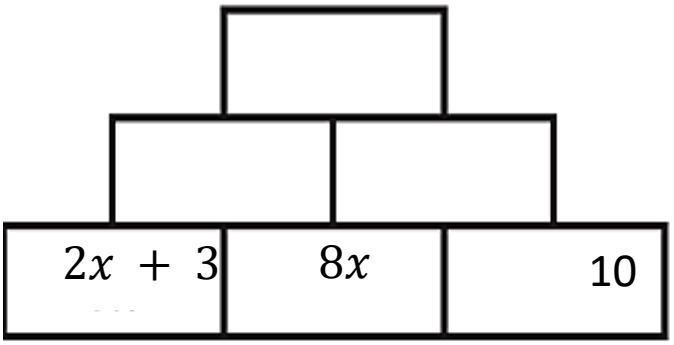
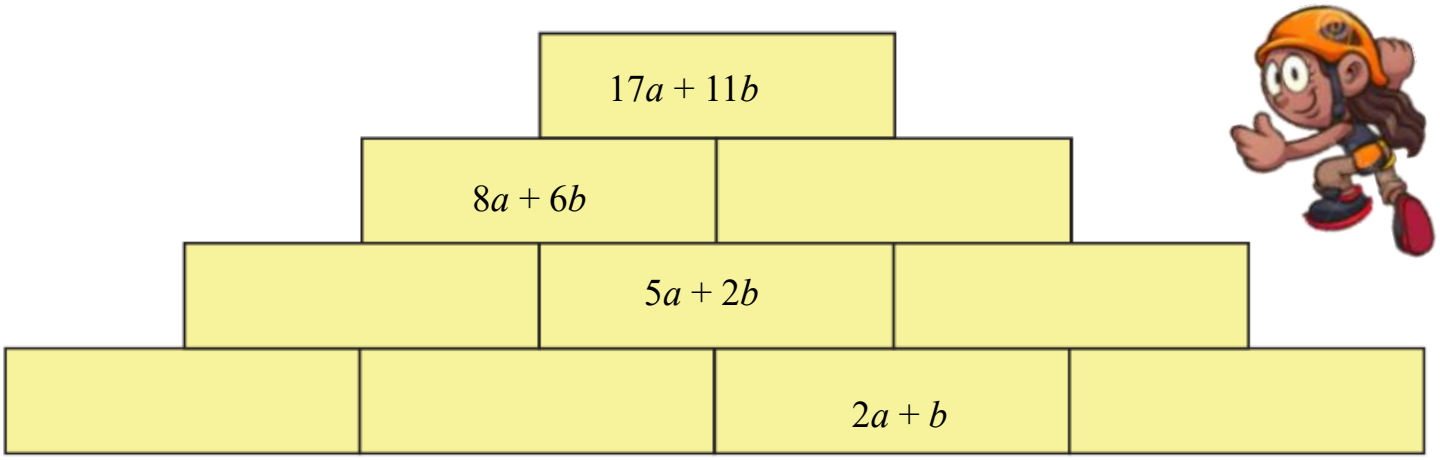


Q3. Complete this algebraic pyramid.

Remember, you find the expression in each block by <u>adding</u> the expressions in the two blocks below it.



➢ 3.2 Writing algebraic expressions

Q1. Write each as an expression.

a. Three more than twice ***R*** → _____

b. Five less than ***X*** → _____

c. Ten more than half ***T*** → _____

d. ***B*** divided by 3, then increased by 7 → _____

e. Double ***E***, then subtract 9 → _____

f. Three times a ***S*** → _____

Q2. A man is ***n*** years old.

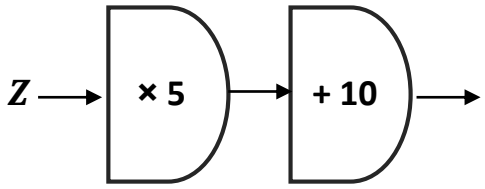
a. How old was he 12 years ago? _____

b. The man's wife is 6 years **younger** than he is. How old is she? _____

c. The man's mother is **twice** his age. How old is she? _____

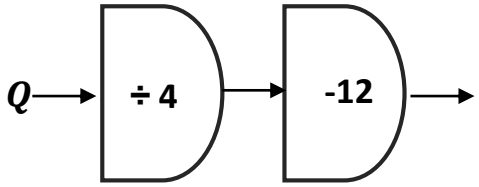
Q3. Write an expression for the output of the function machine.

a.



_____

b.



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➢ 3.3 Using formulae

Q1. Work out the **value** of each expression.

a. $g + 2f$ when $g = 22$ and $f = 8$

b. $3h - 4w$ when $h = 7$ and $w = 12$

c. $\frac{n}{5}$ when $n = 85$

d. $\frac{24}{k} - 3v$ when $k = 3$ and $v = 5$

Q2. Find the value of each expression when $\boldsymbol{a} = \mathbf{2}$ and $\boldsymbol{b} = \mathbf{-4}$.

a. $3a + b$ _____

b. $5a - 2b$ _____

Q3. A chemist uses the formula

$$C = \frac{m}{V}$$

to calculate the concentration of a solution, where m is the mass of solute (in g) and V is the volume of solution (in L). Work out the concentration C for:

a. 10 g of solute in 2 L of solution

b. 25 g of solute in 5 L of solution

Q4. A mechanic uses the formula $\boldsymbol{F = ma}$ to calculate the force on a car, where $\boldsymbol{m}$ is the mass (in kg) and $\boldsymbol{a}$ is the acceleration (in m/s²). Work out the force $\boldsymbol{F}$ on a car with:

a. Mass 1200 kg and acceleration 3 m/s²

b. Mass 800 kg and acceleration 5 m/s²

➢ 3.4 Writing formulae

Q1. a. Max has a Saturday job and he earns \$8 per hour.

Write a formula connecting the amount, $\boldsymbol{P}$, he is paid, in dollars, with the number of hours he works, $\boldsymbol{h}$.

_____

b. A can of soda costs \$0.75.

Write a formula connecting the cost, $\boldsymbol{C}$, in \$, with the number of cans of soda bought, $\boldsymbol{n}$.

_____

c. Amir has £11.
Write a formula to calculate the amount of money Amir has left, $\boldsymbol{A}$, in £, after spending \$ $\boldsymbol{n}$.

_____

➢ 3.5 Brackets and formulae

Q1. Expand the brackets.

a. $7 (5 + g) =$ _____ b. $11 (3s – 4) =$ _____

c. $4x (4 – x) =$ _____ d. $8 (6 + 4w) =$ _____

Q2. Which one of these expressions is the odd one out?
Explain your answer.

$4(9x + 12)$ $1(48 + 36x)$ $2(18x + 24)$

$9(4x + 5)$ $6(6x + 8)$

Q3. Samira has 4 beads and 2 pots.

She puts the beads in the pots.

a represents the number of beads in one pot.

b represents the number of beads in the other pot.

Write all possible sets of values for a and b.

$a =$ _____ and $b =$ _____

$a =$ _____ and $b =$ _____

$a =$ _____ and $b =$ _____

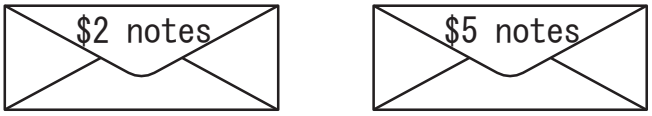
$a =$ _____ and $b =$ _____

$a =$ _____ and $b =$ _____

➢ Past Paper Questions

Q1. Eva has some $2 notes and some $5 notes.

She keeps them in two separate envelopes.



A represents the **total amount** in the envelope that contains the $2 notes.

B represents the **total amount** in the envelope that contains the $5 notes.

A + B = $25

Write a possible pair of values for A and B.

A = $ _____

B = $ _____

[1]

Q25, 0096/02/A/M/25

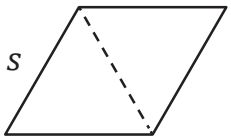
Q2. The perimeter, p, of an equilateral triangle with side length, s, is written as

$$p = s + s + s$$

(a) Find the value of p if s = 12 cm.

_____ cm [1]

(b) Two **identical** equilateral triangles are joined together to make a new shape.



Draw a ring around the correct expression for the perimeter, d, of the new shape.

d = s + s + s

d = s + s + s + s

d = s + s + s + s + s

d = s + s + s + s + s + s

[1]

Q13 ,0096/01/O/N/23

Q3. Pierre has some $1 notes **and** some $2 notes.
The total value of the notes is $50

g represents the number of $1 notes Pierre has.
h represents the number of $2 notes Pierre has.

(a) Write the value of **g** when **h** is 10

_____ [1]

(b) Write the largest possible value of **h**.

_____ [1]
Q27, 0096/02/O/N/24

Q4.
Ahmed and Yuri have some pencils.
Ahmed has **more** pencils than Yuri. Yuri has an **even** number of pencils.

The number of pencils Ahmed has is represented by 

The number of pencils Yuri has is represented by 

 +  is greater than 60

If  is 45 write **two** possible values for 

_____ or _____ [1]