END-OF-UNIT TEST – STAGE 7
UNIT 2: EXPRESSIONS, FORMULAE AND EQUATIONS

1 Put a tick [✓] in the box next to the **expression**.

$3x + 9$ ☐ $3x + 9 = 12$ ☐ [1]

2 Maha thinks of a number, x.

Write an expression for the number Maha gets when she:

a divides the number by 2, then subtracts 5

_____

b multiplies the number by 2, then subtracts the result from 25

_____[1]

3 For each of these inequalities, write the smallest integer that n could be.

a $n > 8$ _____

b $n > 2.3$ _____[1]

4 For each of these inequalities, write the largest integer that y could be.

a $y < 5$ _____

b $y < 12.1$ _____[1]

5 Work out the value of each expression when $p = 3$ and $q = 10$.

a $p + 3$ _____

b $q - p$ _____

c $5q - 1$ _____

d $pq - q$ _____

e $\frac{q}{5} + 4$ _____

f $\frac{9p}{3} - 7$ _____[3]

LIVEWORKSHEETS

6 Write a formula for the number of seconds in any number of minutes, in:

a Words _____

b letters _____[1]

7 Simplify each of these expressions.

a $p + p + p + p + p$ _____

b $9p + p$ _____

c $9p^2 - 5p^2$ _____

d $6p + 3t - 5p + t$ _____

e $4ab - 3ba + 7rs - 7sr$ _____

f 9p+ 7d -3pd+ 23p-23dp_____[3]

8 Simplify this expression. Write your answer in its simplest form and as an improper fraction.

$\frac{3x}{4} + \frac{7x}{12}$ _____[1]

9 Expand the brackets.

a $5(p - 2)$ _____

b 3(5 − *t*) -3(t+7r)_____

c $4(d + 3r)$ _____

d 3(d-4r) + 8(4r-6d)_____[2]

10 Solve each of these equations and check your answers.

a x + 5 = 18 _____ _____ _____ _____

b x − 8 = 22 _____ _____ _____ _____

c 5x = 40 _____ _____ _____ _____[2]

11 Show that 3 (4x + 8) − 4x+ 8(5 − 2x) = 8(8 - x)

_____

LIVEWORKSHEETS

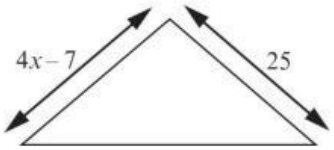
_____[1]

Show that $4(2x + 7) + 3(6x - 5) \equiv 13(2x + 1)$.

_____

_____[1]

12 The diagram shows the lengths of the equal sides of an isosceles triangle.



For the triangle:

Write an equation. _____

Solve your equation to find the value of x.

_____

_____[2]

13

Simplify the following expression completely:

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

_____

_____

_____

_____

_____

_____

_____

_____[1]

LIVEWORKSHEETS

14

The perimeter P of a rectangle is given by the formula:

$$P = 2(l + w)$$

where l is the length and w is the width.

- (a) Write down the formula for w in terms of P and l.
- (b) Find the width when $P = 50$ cm and $l = 15$ cm.

_____

_____

_____

_____

_____

_____[2]

15

Anna thinks of a number. She multiplies it by 4, then subtracts 7. The result is 29.

- (a) Write an equation to represent this problem.
- (b) Solve the equation to find Anna's number.

_____

_____

_____

_____

_____

_____[2]

LIVEWORKSHEETS

16

A sequence of shapes is made from small squares:

- Shape 1 has 4 squares.
- Shape 2 has 7 squares.
- Shape 3 has 10 squares.
- Shape 4 has 13 squares.

(a) Write an expression for the number of squares in Shape n.

(b) Use your formula to find the number of squares in Shape 20.

[2]

17 Solve for x

$3(2x-4)+5=2(x+3)+7$

[2]

LIVEWORKSHEETS