

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]

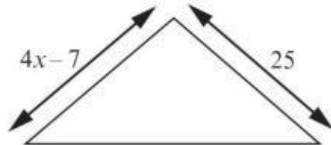
- 6** Write a formula for the number of seconds in any number of minutes, in:
- a** Words _____
- b** letters _____ [1]
- 7** Simplify each of these expressions.
- a** $p + p + p + p + p$ _____
- b** $9p + p$ _____
- c** $9p^2 - 5p^2$ _____
- d** $6p + 3t - 5p + t$ _____
- e** $4ab - 3ba + 7rs - 7sr$ _____
- 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 $3(4x + 8) - 4x + 8(5 - 2x) = 8(8 - x)$
- _____

_____ [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]

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]

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]