Maths Skills Assessment

Name:_____

Please provide a hand-written response to the following questions:

Show all working in the space provided. Calculators may be used.

Arithmetic

1. Perform the following operations

    a) $6 \times \dfrac{2}{5}$

    b) $\dfrac{3}{5} \times \dfrac{10}{12}$

    c) $\dfrac{3}{5} \div \dfrac{1}{2}$

2. Write the following decimals as fractions:

  a) 0.75

  b) 0.8

  c) 16.275

  d) 6.333333 . . .

Maths Skills Assessment

3. Write these numbers to the given accuracy:
   a) 0.579 138 to 1 decimal place

   b) 0.525 to 2 decimal places

   c) 0.000 897 to 1 significant figure.

4. Find the value of the following expressions:
   a) $2 \times 5 + 4$

   b) $(5 + 4)^2 \times 4 \div 2$

   c) $4 \times 2^2 - 12 \div 4$

Algebra

5. Each of the following expressions can be written as a^n for some value of n. In each case determine the value of n.
   a) $a \times a \times a \times a$

   b) $(a^4)^2$

   c) $\dfrac{a^2 \times a^5}{(a^3)^3}$

Maths Skills Assessment

6. Simplify the following expression

a) $3x^2 \times 2x^4$

b) $(2x^3)^4$

7. Expand and simplify the following expressions.

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

b) $5pq - p(2 - p)$

c) $(x - 2)(x + 3)$

Maths Skills Assessment

8. Express each of the following fractions in its simplest form.

a) $\dfrac{x^2+5x}{x+5}$

b) $\dfrac{x+2}{x^2-x-6}$

9. Solve the following equations.

a) $9 + 5x = 3x + 13$

b) $6 - 4(x + 3) = 2(x - 1)$

c) $\dfrac{3x}{4} = \dfrac{2}{5}$

Maths Skills Assessment

10. Solve the following quadratic equations

a) $x^2 - 3x + 2 = 0$

b) $x^2 - 5 = 4x$

11. Rearrange each of the following formulae to make the quantity shown the subject.

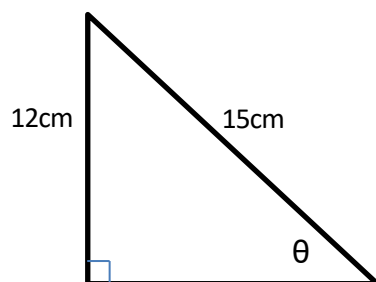a) $y = a + \dfrac{1}{x}$ Rearrange for x
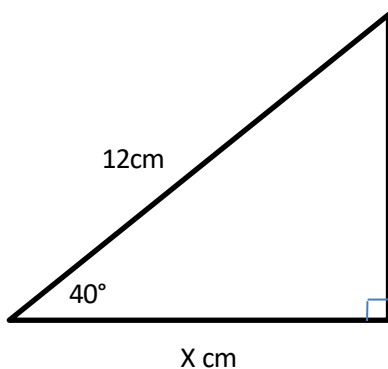
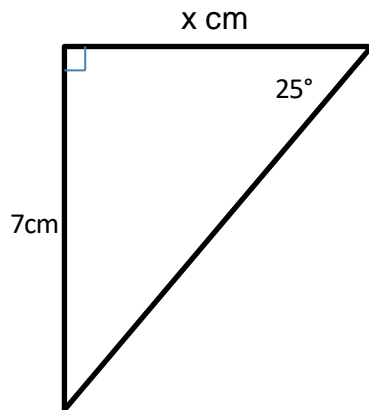## Trigonometry and Pythagoras' Theorem

12.

    a) Find the value of θ

    b) Find the value of x, correct to 1 decimal place

Maths Skills Assessment

c) Find the value of x, correct to 1 decimal place

x cm

25°

7cm

d) Find the value of x, correct to 1 decimal place

X cm

8 cm

7 cm

Maths Skills Assessment

Linear Functions

13. For the line y = 2x – 1

    a)   what is the gradient?

    b) what is the y-intercept?

    c) find the x-intercept.

    d) sketch the line