1 Make t the subject of the formula $2(d - t) = 4t + 7$

$t =$ .....

(Total for Question 1 is 3 marks)

2 (a) Expand $3(2y - 5)$

.....

(1)

(b) Factorise completely $8x^2 + 4xy$

.....

(2)

(c) Make h the subject of the formula

$$t = \frac{gh}{10}$$

$h =$ .....

(2)

(Total for Question 2 is 5 marks)

3 You can change temperatures from °F to °C by using the formula

$$C = \frac{5(F - 32)}{9}$$

F is the temperature in °F.
C is the temperature in °C.

The minimum temperature in an elderly person's home should be 20 °C.

Mrs Smith is an elderly person.
The temperature in Mrs Smith's home is 77 °F.

*(a) Decide whether or not the temperature in Mrs Smith's home is lower than the minimum temperature should be.

(3)

(b) Make F the subject of the formula $C = \frac{5(F - 32)}{9}$

.....

(3)

(Total for Question 3 is 6 marks)

4 Make a the subject of the formula $p = \dfrac{a^3 + 5}{4 - a}$

.....

(Total for Question 4 is 4 marks)

5. Here is a shape *ABCDE*.

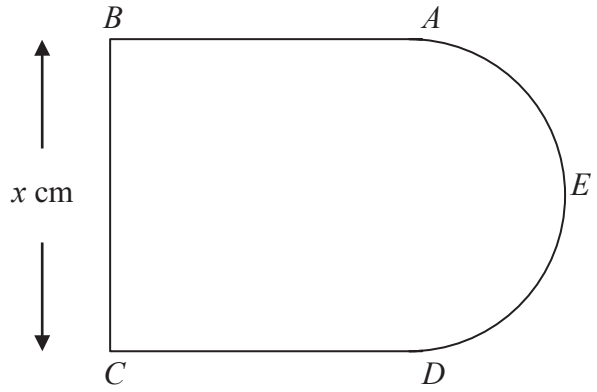

Diagram **NOT** accurately drawn

AB, *BC* and *CD* are three sides of a square.
BC = *x* cm.
AED is a semicircle with diameter *AD*.

The perimeter, *P* cm, of the shape *ABCDE* is given by the formula

$$P = 3x + \frac{\pi x}{2}$$

(a) Rearrange this formula to make *x* the subject.

.....

(2)

The area, A cm^2, of this shape is given by $A = kx^2$ where k is a constant.

(b) Find the exact value of k.
Give your answer in its simplest form.

.....

(3)

(Total 5 marks)

6 . Make q the subject of the formula $5(q + p) = 4 + 8p$
Give your answer in its simplest form.

$q =$ .....

(Total 3 marks)

7 Make t the subject of the formula

$$p = \frac{3 - 2t}{4 + t}$$

.....

(Total for Question 7 is 4 marks)

8 Make y the subject of the formula

$$t = \frac{2 - 3y}{y + 2}$$

.....

(4)

(Total for Question 8 is 7 marks)

9 (a) Simplify $2a^3b \times 5a^2b^3$

.....

(2)

(b) Make y the subject of the formula $p = \sqrt{\dfrac{x + y}{5}}$

.....

(3)

(Total for Question 9 is 5 marks)

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10 Make v the subject of the formula $t = \dfrac{v}{5} + 2$

$v =$.....

(Total 2 marks)

11 Make p the subject of the formula $y = 3p^2 - 4$

.....

(Total for Question 11 is 3 marks)

12 $A = 4bc$

$A = 100$
$b = 2$

(a) Work out the value of c.

.....

(2)

$$m = \sqrt{\frac{k+1}{4}}$$

(b) Make k the subject of the formula.

.....

(3)

(Total for Question 12 is 5 marks)

13 (a) Factorise $4x^2 - 9$

.....

(1)

(b) Make m the subject of

$$g - 3m = am + 5$$

.....

(3)

(Total for Question 13 is 4 marks)

14 (a) Simplify fully $\dfrac{2x^2 - 5x + 3}{x^2 + 5x - 6}$

.....

(3)

(b) Make m the subject of

$$\frac{m}{v} - \frac{t}{b} = \frac{m - t}{R}$$

.....

(4)

(Total for Question 14 is 7 marks)

15 (a) Solve $3x^2 = 147$

.....

(2)

(b) Work out the value of 2^{-3}

.....

(1)

(c) Simplify $(3x^2)^3$

.....

(2)

$w = 4p - 16$

(d) Make p the subject of this formula.

.....

(2)

(Total for Question 15 is 7 marks)

16 Make k the subject of the formula $t = \dfrac{k}{k-2}$

.....

(Total 4 marks)

17. $y = p - 2qx^2$

$p = -10$
$q = 3$
$x = -5$

(a) Work out the value of y.

.....

(2)

(b) Rearrange $y = p - 2qx^2$

to make x the subject of the formula.

.....

(3)

(Total 5 marks)

18 Make A the subject of the formula $r = \sqrt{\frac{A}{3}}$

$A =$ .....

(Total 2 marks)