Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Solving Equations 3

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

- Write your name in the space provided.

- Write your answers in the spaces provided in this question paper.

- Answer ALL questions.

- Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

- You should have a ruler, compass and protractor where required.

Total Marks :

1) Solve the equations:

(a) $5x - 6 = 2x$

Answer.....................................

(b) $2x - 3 = 3x - 8$

Answer.....................................

(c) Solve the equation $3x + 1 = x + 5$

Answer.....................................

(d) Solve the equation: $4y + 2(y - 1) = 5y$

Answer.....................................

(8 marks)

2) Solve the equations:

a) $3x - 7 = x + 23$

Answer......................................

b) $3(x + 7) = 36$

Answer......................................

c)   **Solve** the equation: $3(x - 7) = 9$

Answer......................................

d)   Solve: $3x + 20 = 5x - 2$

Answer......................................

(8 marks)

3) Solve the equations below:

(i) $10a = 3a + 21$

Answer......................................

(ii) $7(b - 10) = 2(4 - 3b)$

Answer......................................

(iii) Solve the equation $3y - 4 = 2y - 1$

Answer......................................

(6 marks)

4) Solve the equation

$5x + 4 = 18 - 2x$

Answer......................................

(2 marks)

5) Solve the equations:
   a) $2(x + 3) = 27$

Answer......................................

b) Solve: $3p - 2 = 4 - 2(p - 2)$

Answer......................................

c) Solve the equation: $2x - 9 = 5x - 3(3x + 2)$

Answer......................................

d) Solve $\dfrac{4x+7}{2} = 31$

Answer......................................

(8 marks)

6) Solve the following equations to find the value of x.

(i) $3x + 7 = 24$	**(ii)** $3(x + 1) - (x - 5) = 10$
Answer...................................	Answer...................................
(iii) $3x = \dfrac{1}{27}$	**(iv)** $\dfrac{4x+1}{5} = 7$
Answer...................................	Answer...................................

(8 marks)

7) a) Solve the equation $5(x - 4) = 2(x + 5)$.

Answer.....................................

b) Solve   (i) $4x + 5 = x + 68$ 　　　　(ii) $\frac{x}{6} - 3 = 11$

Ans: (i) _____ 　　　　Ans: (ii) _____

c) Solve the equation $\dfrac{x}{2} = x - 6$.

Answer....................................

d) Solve the equation $5(x - 4) + 3(x + 7) = 17$.

Answer....................................

(10 marks)

8) The lengths of the sides of rectangle ABCD are measured in centimetres.
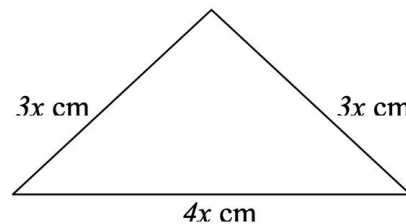
D $\quad$ $3x + 2$ $\quad$ C

$4x - 1$
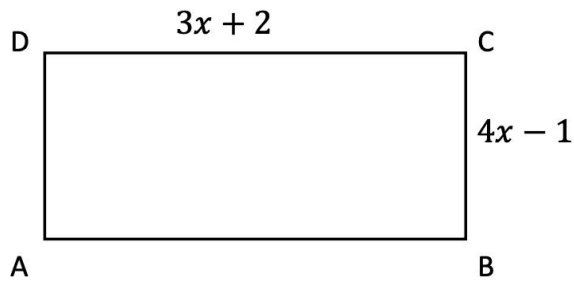
Diagram not drawn to scale

A $\qquad$ B

a) The perimeter of the rectangle is 30 cm.
Form an equation and solve it for x.

Ans: _____

9) The equal sides of an isosceles triangle are each $3x$ cm long and the third side is $4x$ cm long. If the perimeter of the triangle is 30 cm, find the value of x and then calculate the length of each side of the triangle.
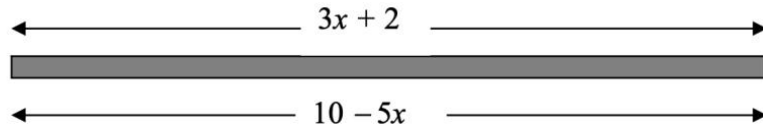
$3x$ cm $\qquad$ $3x$ cm

$4x$ cm

x =...............................[3]

Longest side..................................cm [1]

Equal sides...................................cm [1]

10) a) Solve the equation: $2x - 8 = x + 4.$

_____

   b) The length of a plank is written in two ways as shown:

$3x + 2$

$10 - 5x$

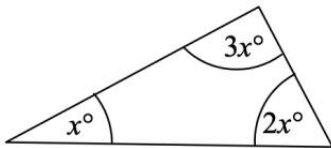   (i)   Use this information to form an equation, in terms of x, for the length of the plank.

   (ii)   Solve the equation to find the value of x.

Answer....................................

(5 marks)

11) a) Solve the equation $3(x - 5) = x + 5$.

Answer....................................

b)

Work out: (i) the value of x
(ii) the size of each angle of this triangle.

Answer....................................

The size of the 3 angles in order of smallest to biggest are

Answer.................................... and .... and ....

(6 marks)

12) In this puzzle, each symbol stands for an unknown number.

The number at the end of each row gives the **total** of all the numbers in that row.

❀	❀	❀	30
★	★	15	31
❀	❀	★	?

a) What number does the symbol '❀' stand for?

Ans: ❀ = _____

b) i) Use x instead of the symbol '★' to write an equation to represent the **second row**.

Ans: _____

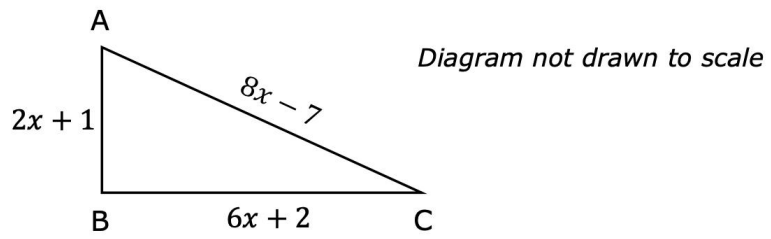ii) Solve your equation to find the value of x.

Ans: x = _____

c) Work out the **total of the third row**.

Answer.....................................

(7 marks)

13) The diagram represents a triangle ABC.

A

Diagram not drawn to scale

$2x + 1$

$8x - 7$

B $6x + 2$ C

(a)   The perimeter of the triangle is 84 cm. Form an equation and solve it for x.

(b)   Calculate the length of the three sides of the triangle.

AB....................................cm

AC....................................cm

BC....................................cm

(7 marks)