Forming and solving equations and inequalities

Topics

Solving linear equations – Solving quadratic equations – Solving linear inequalities
Forming and solving equations

Questions

1. Solve

(a) $3x + 25 = 8x$

$x =$ ……………….

(1)

(b) $5a - 7 = 5 - a$

$a =$ ……………….

(2)

(c) $6(q - 5) = 4(5q + 3)$

$q =$ ……………….

(3)

(d) $\dfrac{7t - 1}{3t + 1} = 5$

$t =$ ……………….

(3)

(Total marks)

2. Solve by factorizing

(a) $x^2 - x - 30 = 0$

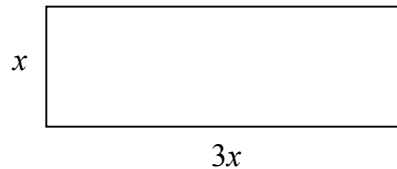$x = \dots\dots$ or $x = \dots\dots$

(3)

(b) $5a^2 + 4 = 12a$

$a = \dots\dots$ or $a = \dots\dots$

(3)

(Total 6 marks)

3. A rectangle is three times as long as it is wide.

It has diagonals of length 36cm.

x

$3x$

Work out the area of the rectangle, giving your answer as an integer.
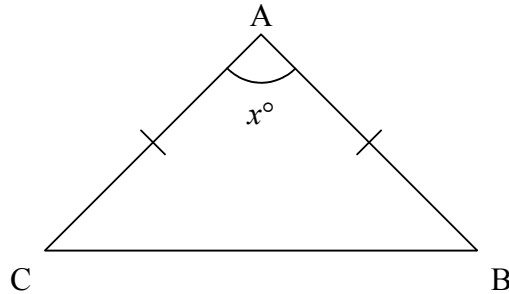
Area = $\dots\dots$cm^2

(Total 3 marks)

4. Triangle ABC is an isosceles triangle.

A

$x°$

C   B

Not drawn to scale

$AB = AC$, $AB = 4y+3$, $BC = 20-2y$, $B\hat{A}C = x°$

(a)   Write an expression for the perimeter of the triangle in terms of y.

perimeter =…………………………

(2)

(b)   The perimeter of the triangle is 38. Write and solve an equation to find y.

y=…………

(3)

(c)   Find an expression in terms of x for the size of angle $A\hat{C}B$.
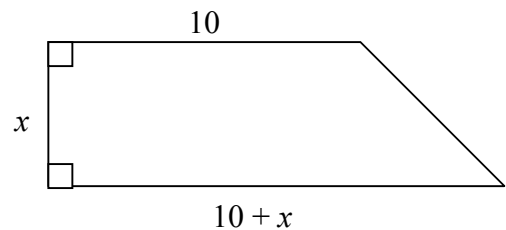
$A\hat{C}B$ =……………………

(2)

(Total 7 marks)

5.   The area of this trapezium is 48cm^2
All lengths are marked in cm
Diagram **not** drawn to scale

Find x

10

x

$10 + x$

x=…………

(Total 6 marks)

Forming and solving equations and inequalities

6.   *n* is an integer such that, $-6 < 3n \leq 9$.

   (a)   List all the possible values of *n*.

   ……………

   (3)

   (b)   Solve the inequality
$$4x - 7 > 2x$$

   ……………

   (2)

   (Total 5 marks)

7.   Each pack of Megamints contains *x* mints.
   Bethan has four packs of Megamints.
   Calum has five packs of mints, but eats 10 mints.
   Duncan has seven packs of mints but eats 39 mints.

   Duncan now has the least number of mints and Calum has the most.

   (a)   Write these statements as inequalities

   (2)

   (b)   Find all possible values of *x*.

   (4)

   (Total 6 marks)