T&T2 Test Yourself 1

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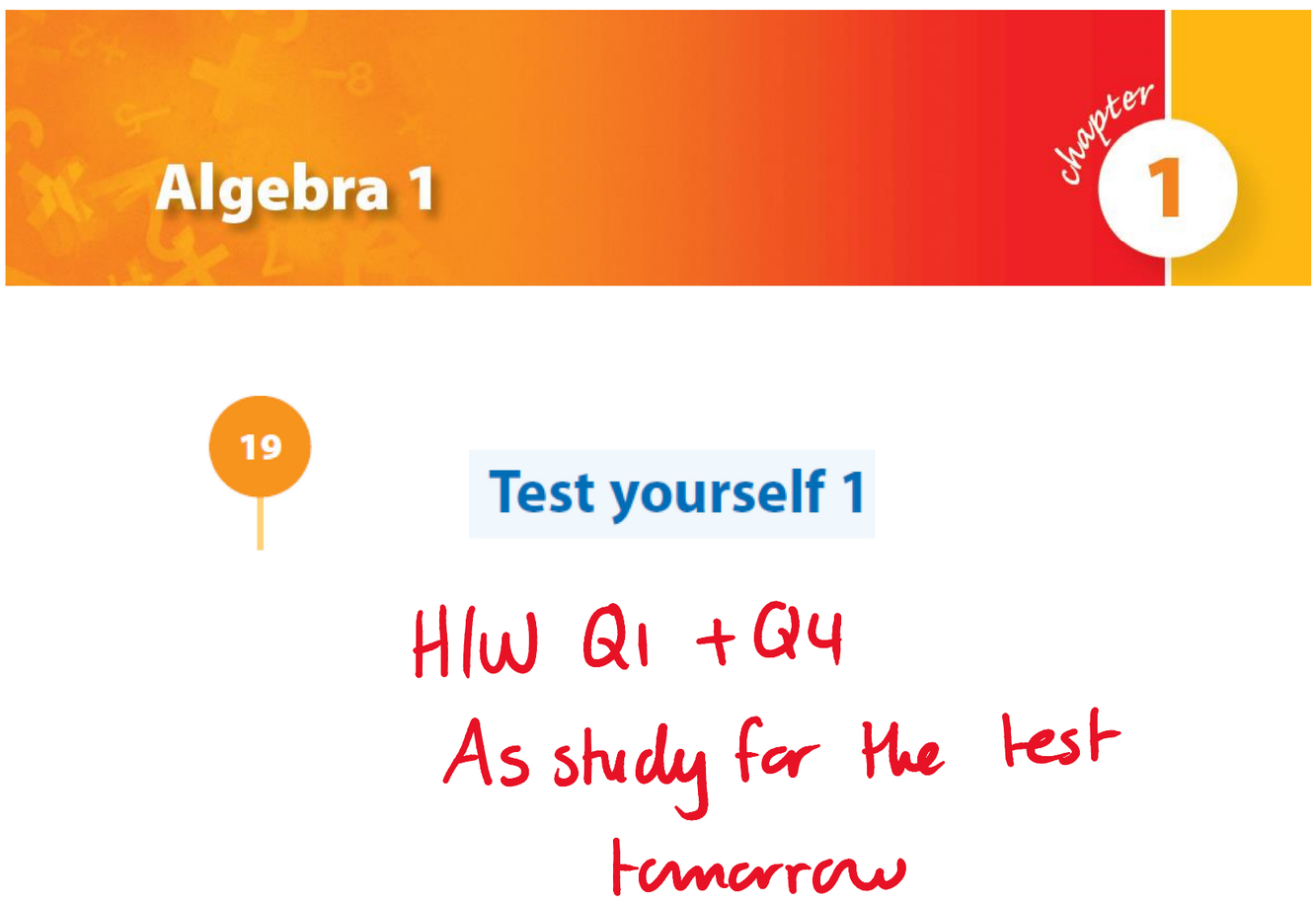


Test yourself 1

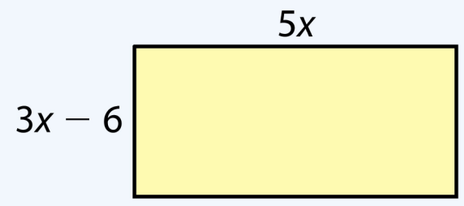
1. (a) (i) Remove the brackets and simplify this expression:

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

(ii) Solve the equation $2(x + 2) - 3(x - 3) = x + 7$

(b) Solve the inequality $4 \leqslant 5x - 6 \leqslant 14$, $x \in R$, and illustrate your solution on the number line.

(c) Write an expression for the perimeter of the given rectangle.
If the perimeter of the rectangle is 36 cm, find the value of x.

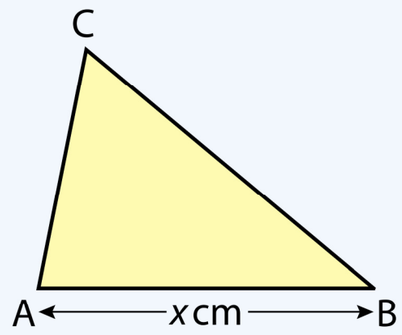


2. (a) (i) Which of the expressions in the boxes has the highest value when $x = 5$?

(ii) Which of the expressions has the lowest value when $x = 5$?

$2 - 4x^2$ | $10(x + 3)$ | $2(10 - x)$ | $\frac{x^2}{2}$ | $\frac{25}{x - 4}$

(b) The side [AB] of this triangle is x cm long. [BC] is 3 cm longer than [AB], and [CA] is 1 cm shorter.



(i) Write down an expression for the length of [BC].

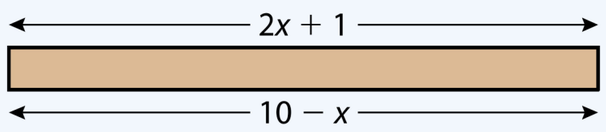
(ii) Write down an expression for the length of [CA].

(iii) Write down and simplify an expression for the perimeter of triangle ABC.

(iv) The perimeter of the triangle is 44 cm.
Form an equation in x and solve it to find the lengths of the three side.

3. (a) (i) By forming an equation, work out what x stands for.

(ii) What is the length of the plank?



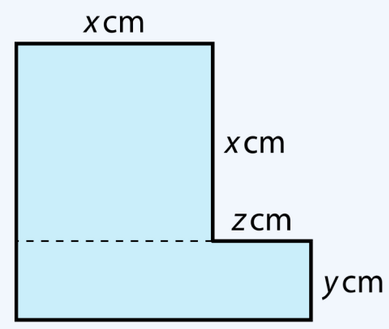
(b) Show on the number line the range of values of x for which

$-3 \leqslant 2x - 1 \leqslant 7, x \in R$.

(c) The given figure consists of a square and a rectangle.

(i) If the perimeter of the figure is p cm, express p in terms of x, y and z.

(ii) If $x = 2y, y = 2z$ and $p = 55$, find the value of x.



4. (a) Solve the equation $5(x - 2) + 11 = 6x - 10$.

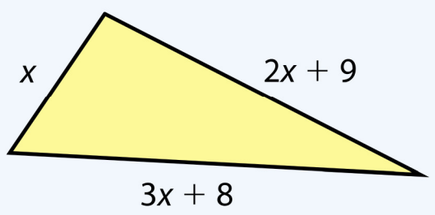
(b) (i) Expand and simplify $(3x - 2)(2x^2 + x + 3)$.

(ii) Evaluate $\frac{ab}{a-b}$ when $a=\frac{1}{2}$ and $b=\frac{1}{3}$.

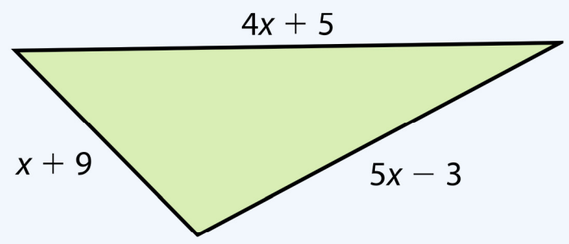
(c) One number is 4 greater than another number. When three times the smaller number is added to twice the larger one, the result is 43. Find the numbers.

5. (a) Find the perimeter of each triangle below when $x = 3$.

(i)

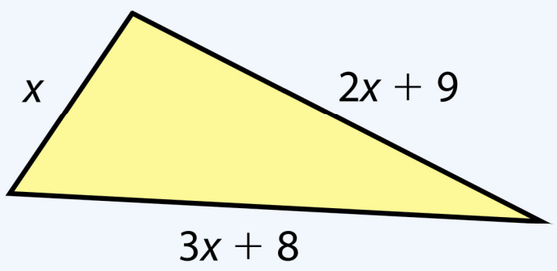


(ii)



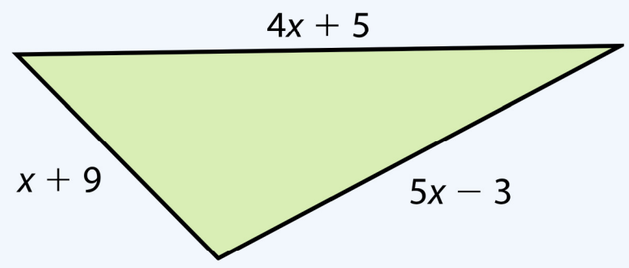
(b) (i) Find an expression for the perimeter of the yellow triangle.

(ii) What value of x gives a yellow triangle with a perimeter of 143?

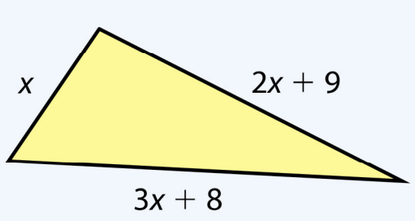


(c) (i) Find an expression for the perimeter of the green triangle.

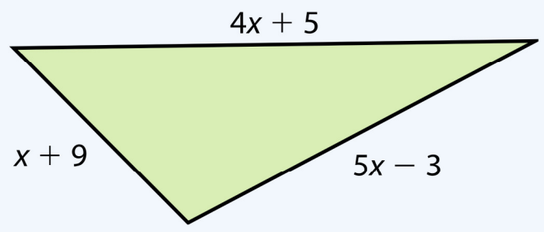
(ii) What value of x gives a green triangle with a perimeter of 50?



(i)

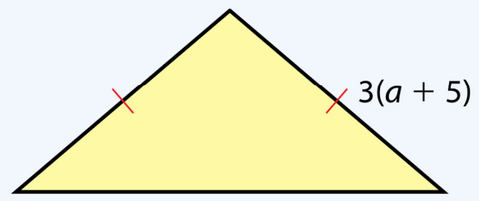


(ii)



(iii) What value of x gives both triangles the same perimeter?

6. (a) Form an equation for the given triangle and solve it.
The perimeter is 48 cm and equal sides are marked.



Perimeter = 48 cm

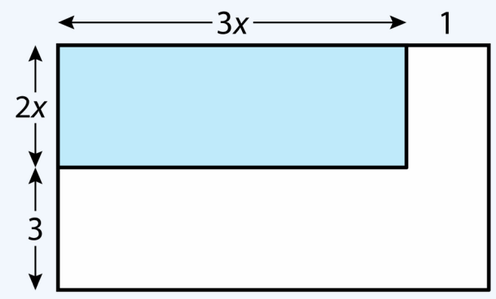
(b)

A	B	C	D	E	F
$2(t-5)$	$2(t^2-7)$	$\frac{4t+3}{-5}$	$5-t^2$	$3t^2-11$	$\frac{3t-17}{2}$

(i) When $t = 3$, three of the above expressions have a value of -4.
Find these expressions.

(ii) When $t = -2$, three of the above expressions have the same value.
Find these expressions.

(c) The given rectangle consists of a shaded part and an unshaded part. The shaded part is $3x$ by $2x$.



(i) Find, in terms of x, the area of the whole rectangle.

(ii) Find, in terms of x, the area of the unshaded part.

(iii) If the area of the unshaded part is 58 sq. units, find the value of x.

Answers

Test yourself 1

1. (a) (i) $6x^2 + x - 3$ (ii) $x = 3$

(b) $2 \leqslant x \leqslant 4$

(c) $16x - 12$; $x = 3$

2. (a) (i) $10(x + 3)$ (ii) $2 - 4x^2$

(b) (i) $(x + 3)$ cm (ii) $(x - 1)$ cm

(ii) $(3x + 2)$ cm

(iv) $3x + 2 = 44$; $|AB| = 14$ cm, $|BC| = 17$ cm, $|CA| = 13$ cm

3. (a) (i) $x = 3$ (ii) 7 units

(b) $-1 \leqslant x \leqslant 4$

(c) (i) $p = 4x + 2y + 2z$

(ii) $x = 10$

Answers

4. (a) $x = 11$

(b) (i) $6x^3 - x^2 + 7x - 6$ (ii) 1

(ii) $x = 10$

(c) 7, 11

5. (a) (i) 35 (ii) 41

(b) (i) $6x + 17$ (ii) 21

(c) (i) $10x + 11$ (ii) 3.9

(iii) $1\frac{1}{2}$

6. (a) $a = 2\frac{5}{8}$

(b) (i) A, D, F (ii) C, D, E (1)

(c) (i) $6x^2 + 11x + 3$ (ii) $11x + 3$

(iii) 5