



Year 10 Specimen Paper Mathematics

Your Last Name	
Your First Name	
Your Current School	
Date of Birth	

Time allowed for this paper: 1 hour

Instructions

- Attempt all the questions.
- Use a calculator where appropriate.
- Show all your working.
- The distribution of marks is given in square brackets [].
- There are 50 marks available in total.

1. (a) Find the two numbers which multiply to give -20 and add to give 19 .

..... [1]

- (b) Find a fraction which is halfway between $\frac{1}{3}$ and $\frac{1}{5}$.

..... [1]

-
2. Steve's dog, Charlie, puts on weight over a two week period in which his weight goes up by 20% to 30 kg. Calculate the dog's weight before the increase.

..... kg [2]

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3. (a) The ages of three children are in the ratio $2 : 3 : 5$. Calculate the age of the youngest child if the total of their ages is 20 .

..... [2]

- (b) Two cars start off 240 miles apart and drive towards each other, one at 80 miles per hour and the other at 40 miles per hour. Calculate how far the first one travels before they meet.

..... miles [2]

4. Solve the equation:

$$4(3x + 2) = 2(x - 3)$$

..... [2]

5. 25 students take a test which is marked out of 100.
Their mean mark is initially 65%.
One of the student's tests is remarked and goes up from 60% to 85%.
Find the new mean mark for the 25 students.

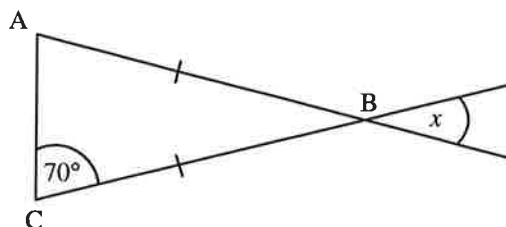
..... [2]

6. The numbers 1 to 99 are written out. Calculate how many times the digit 6 is written.

..... [2]

7. Find the size of the angles marked x :

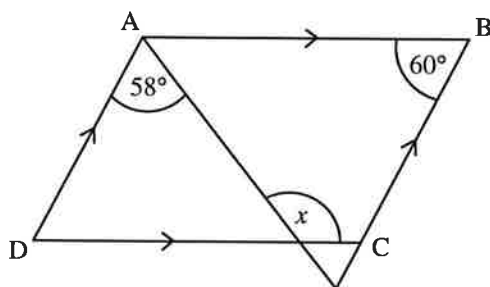
(a)



Note: ABC is an isosceles triangle

..... [2]

(b)



Note: ABCD is a parallelogram

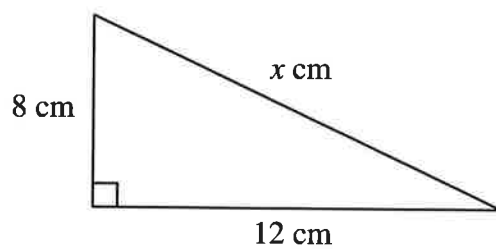
..... [2]

8. A certain number has exactly six factors, including 1 and itself.
Two of the factors are 4 and 10.
What is the number?

..... [2]

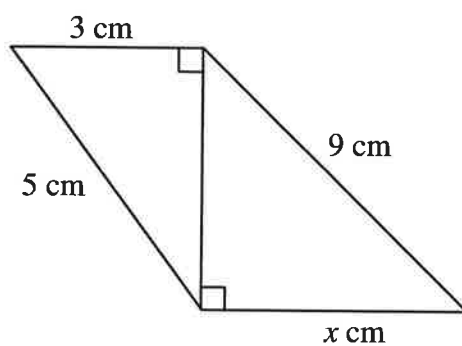
9. Find the length of the sides marked x in the following
Give your answers to 2 decimal places:

(a)



$x = \dots\dots\dots$ cm [2]

(b)



$x = \dots\dots\dots$ cm [3]

-
10. Solve the simultaneous equations:

$$3x - 4y = 6$$

$$5x + 2y = 23$$

$x = \dots\dots\dots$ $y = \dots\dots\dots$ [3]

11. (a) Simplify: $8xy + 7x^2 - 9y - 3xy + 3x^2$

(b) Multiply out and simplify: $(4m - 3)(2n + 1)$ [2]

(c) Simplify: [2]

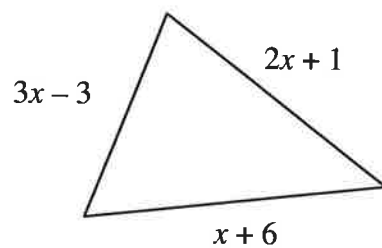
(i) $2xy^2 \times (3y)^2$

..... [2]

(ii) $\frac{3a}{b} + \frac{a}{3b}$

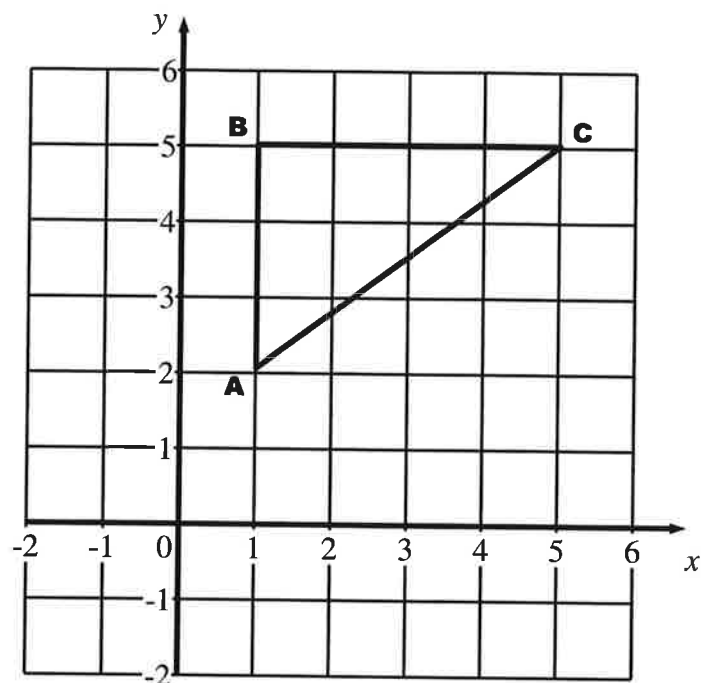
..... [2]

(d) Calculate the value of x if the perimeter of the following triangle is 19 cm.



..... [3]

12.



The triangle ABC has been drawn on the 1 cm square grid above.

Calculate:

(a) the gradient of the line AC,

..... [2]

(b) the area of the triangle ABC,

..... cm^2 [2]

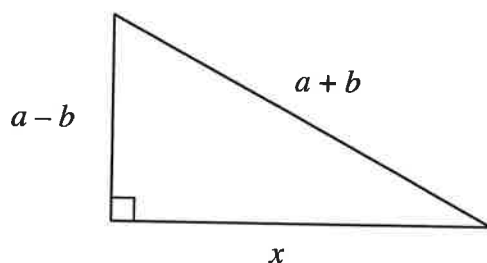
(c) the shortest distance from the line AC to the point B.

..... cm [2]

13. The smallest angle in a triangle is 15° . Find the largest size that the largest angle in the triangle could be.

..... [2]

14. A right angled triangle has sides in terms of x , a and b as shown:



Find an expression for x in terms of a and b .

..... cm [3]

THE END