

# Topic Test 1 (20 minutes)

## Algebra and graphs - Foundation

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1 (a) Solve  $7x = 42$

[1 mark]

$x =$  \_\_\_\_\_

1 (b) Solve  $y - 9 = 22$

[1 mark]

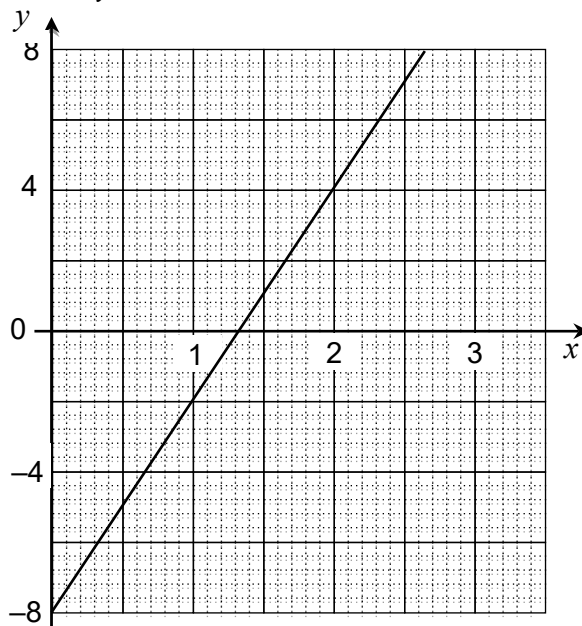
$y =$  \_\_\_\_\_

1 (c) Solve  $4z + 9 = 3$

[2 marks]

$z =$  \_\_\_\_\_

2 Here is part of the graph of  $y = 6x - 8$



2 (a) Use the graph to work out the value of  $y$  when  $x = 2$   
Show on the graph how you obtained your answer.

[1 mark]

$y =$  \_\_\_\_\_

2 (b) Use the graph to solve the equation  $6x - 8 = 5$   
Give your answer to 1 decimal place.  
Show on the graph how you obtained your answer.

[1 mark]

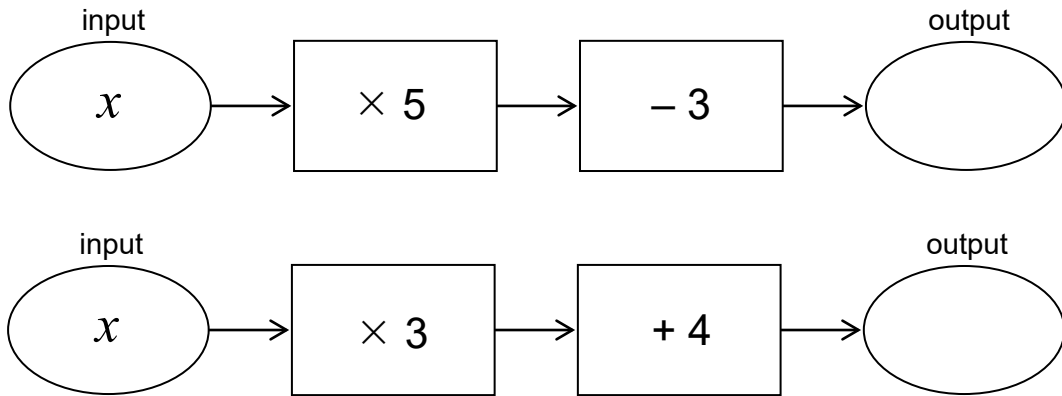
$x =$  \_\_\_\_\_

2 (c) Use the graph to solve the equation  $3x - 4 = -1$   
Show on the graph how you obtained your answer.

[1 mark]

$x =$  \_\_\_\_\_

3 Here are two number machines.



Work out the value of  $x$  for which both machines have the same output.

[3 marks]

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Answer \_\_\_\_\_

4 My age now is  $x$ .  
In 2 years time my son will be half my age.  
The sum of our ages now is 50

Circle the correct equation.

[1 mark]

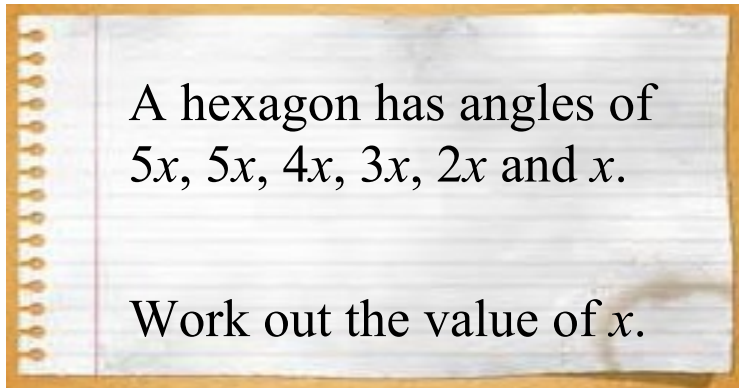
$$x + 2 + \frac{1}{2}(x + 2) = 50$$

$$x + 2 + \frac{1}{2}x = 50$$

$$x + 2 + \frac{1}{2}(x + 2) = 54$$

$$x + 2 + \frac{1}{2}x = 54$$

- 5 A teacher asks her class to write a question that combines algebra and geometry. This is Shana's question.



- 5 (a) Solve Shana's question.

[3 marks]

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$x =$  \_\_\_\_\_ degrees

- 5 (b) Comment on the solution and Shana's question.

[1 mark]

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- 6 Which of the following is the solution to the simultaneous equations?

$$x + y = 10$$

$$2x - y = 2$$

Circle your answer.

(5, 5)

(4, 2)

(4, 6)

$(5\frac{1}{2}, 4\frac{1}{2})$

[1 mark]

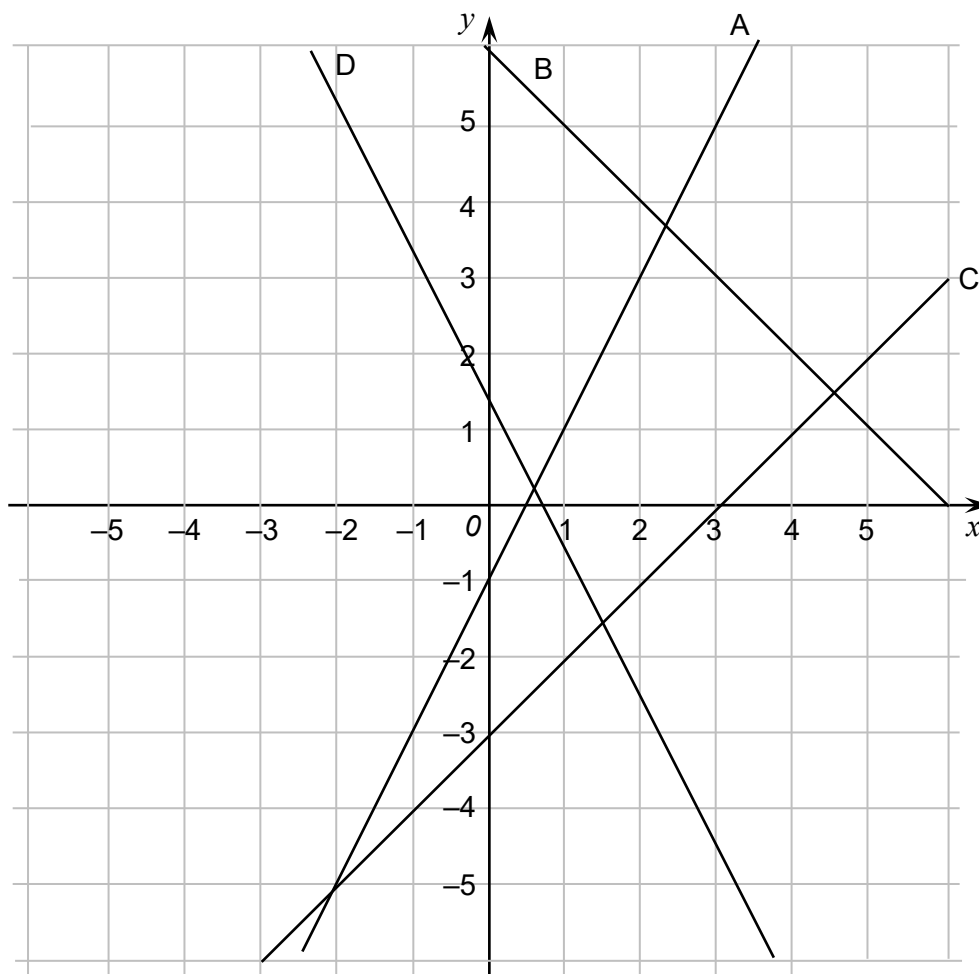
7 Here are four graphs.

Graph A:  $y = 2x - 1$

Graph B:  $x + y = 6$

Graph C:  $y = x - 3$

Graph D:  $2y + 4x = 3$



Use these graphs to write down the answers to the following problems

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**7 (a)** I think of a number.  
I multiply it by 2 and subtract 1  
The answer is 4

What number did I think of ?

[1 mark]

Answer \_\_\_\_\_

**7 (b)** The sum of two numbers is 6  
The difference of the two numbers is 3

What are the two numbers?

[1 mark]

\_\_\_\_\_

Answer \_\_\_\_\_ , \_\_\_\_\_

**7 (c)**  $3 - 4x = 0$

Work out  $x$ .

[1 mark]

\_\_\_\_\_

$x =$  \_\_\_\_\_

**7 (d)**  $2x - 6 = 3 - 4x$

Work out  $x$ .

[1 mark]

\_\_\_\_\_

$x =$  \_\_\_\_\_