Mock Grade 7

Maths Booklet 2

Paper 2H
Calculator

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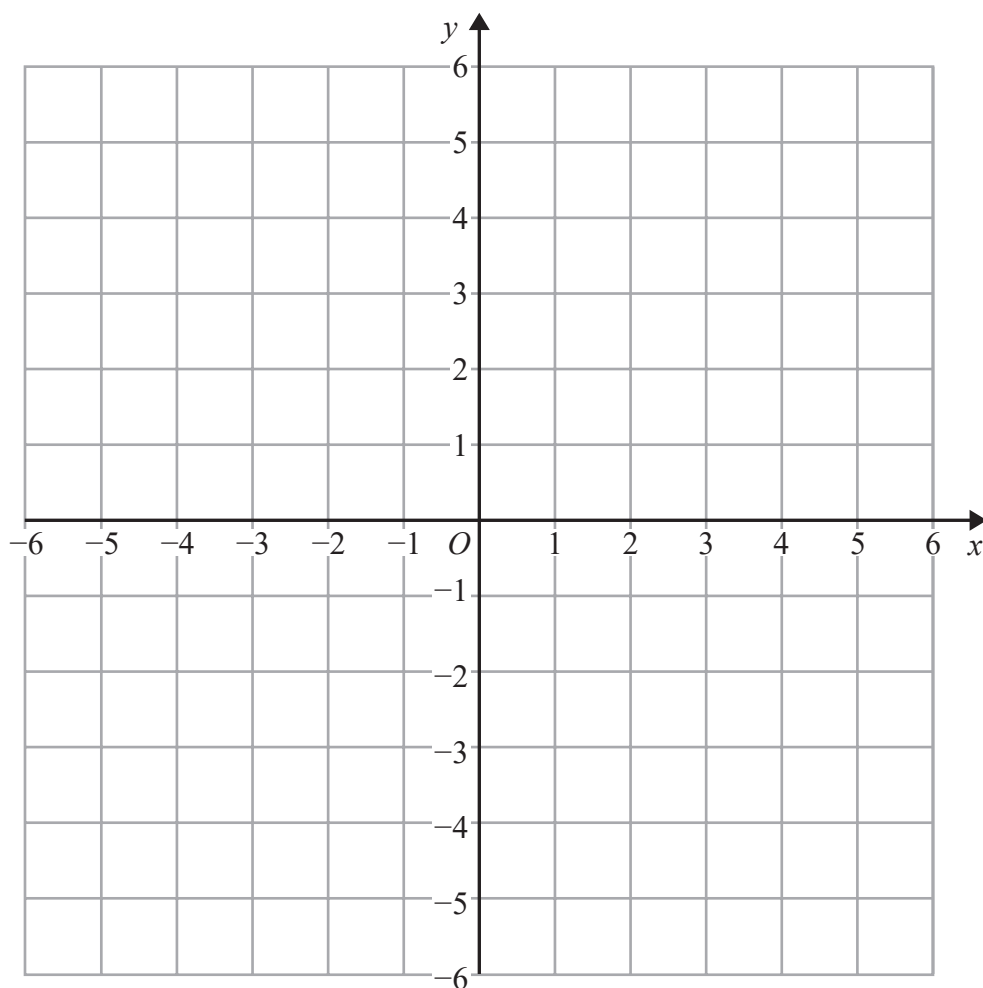
1 On the grid, shade the region that satisfies all these inequalities.

$$x < 3 \qquad y > -2 \qquad y \leq 2x - 1$$

Label the region **R**.

17   There are 20 people in a room.
Each person shakes each other person's hand once.

Work out the number handshakes that take place.

(Total for Question 2 is 3 marks)
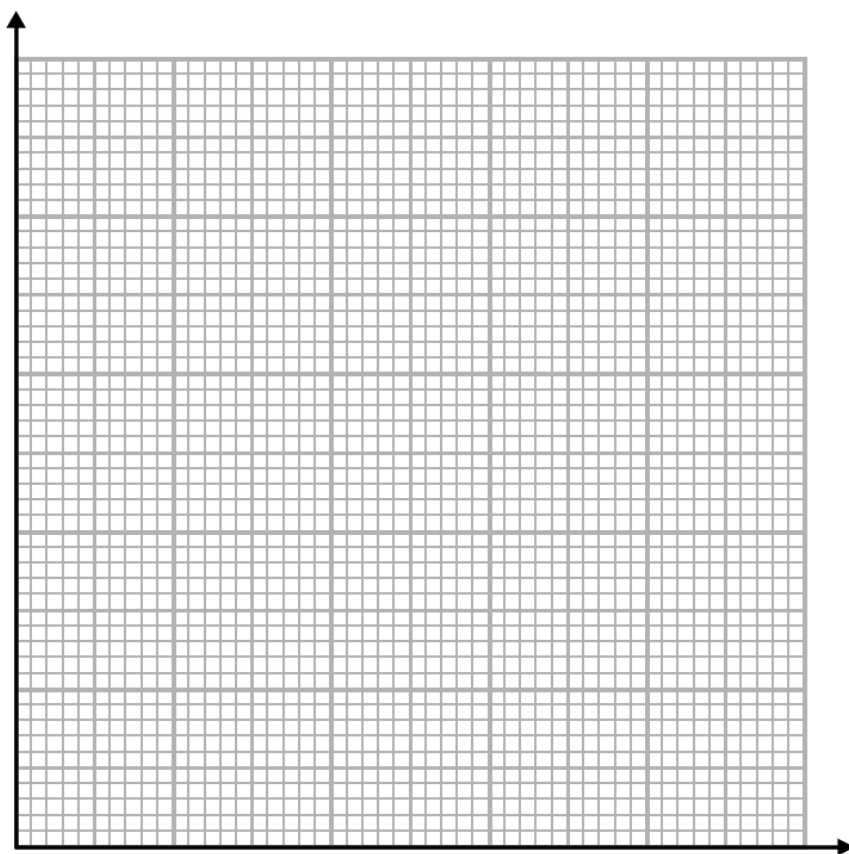
3 Solve $(x - 5)^2 = 7$

Give your solutions correct to 3 significant figures.

(Total for Question 3 is 2 marks)

4 The table shows information about the age of 80 teachers.

Age (years)	Frequency
$20 < a \leqslant 30$	20
$30 < a \leqslant 35$	22
$35 < a \leqslant 40$	16
$40 < a \leqslant 50$	13
$50 < a \leqslant 65$	9

(a) On the grid, draw a histogram for this information.

(3)

(b) Work out an estimate for the fraction of the teachers aged between 30 and 45 years old.

....

(2)

(Total for Question 4 is 5 marks)

5 At time $t = 0$ hours a tank is full of water.

Water leaks from the tank.
At the end of every hour there is 4% less water in the tank than at the start of the hour.

The volume of water, in litres, in the tank at time t hours is V_t

Given that

$$V_0 = 1600$$
$$V_{t+1} = kV_t$$

write down the value of k.

$k =$ ....

(Total for Question 5 is 1 mark)

6 Saffron wants to work out an estimate for the total number of fish in a lake.

On Friday, Saffron catches 70 fish from the lake.
She puts a tag on each of these fish and puts them back into the lake.

On Saturday, Saffron catches 60 fish from the same lake.
She finds that 12 of the 60 fish are tagged.

Work out an estimate for the total number of fish in the lake.

....

(Total for Question 6 is 3 marks)

7 The ratio of Marta's hourly pay to Khalid's hourly pay is 3 : 4

Both Marta and Khalid get an increase of £7.50 in their hourly pay.
The ratio of Marta's hourly pay to Khalid's hourly pay after this increase is 17 : 21

Work out the hourly pay before the increase for Marta and for Khalid.

Marta £...

Khalid £...

(Total for Question 7 is 4 marks)

8 A shop manager wants to advertise special offers on social media platforms.

The manager asks 100 customers which of type A, type B or type C they use.

Of these customers,
   8 use all three types
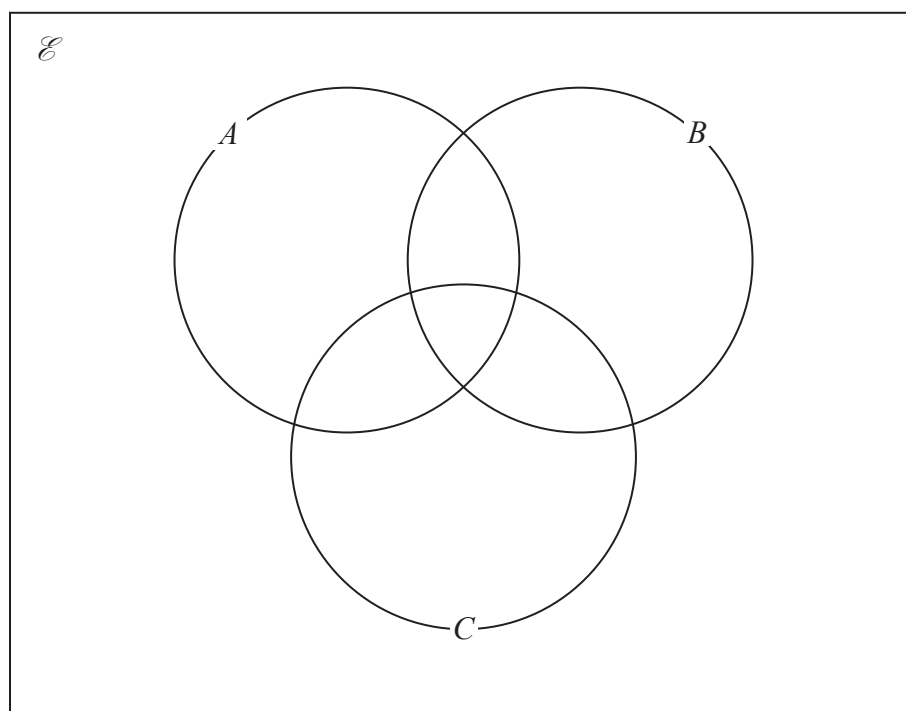   23 do not use any of type A, type B or type C
   15 use both type A and type B
   19 use both type B and type C
   51 in total use type A
   all 20 who use type C also use at least one of type A and type B.

(a) Complete the Venn diagram for this information.

(4)

One of the customers is chosen at random.

Given that this customer uses type B,

(b) find the probability that this customer also uses type C.

....

(2)

(Total for Question 8 is 6 marks)