Name	Class

MATHS TEACHER HUB

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Solving equations

(9 – 1) Topic booklet

Foundation

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.	Total Marks

Instructions

•Use **black** ink or ball-point pen.
•**Fill in the boxes** at the top of this page with your name, centre number and candidate number.
•Answer **all** questions.
•Answer the questions in the spaces provided
– *there may be more space than you need*.
•Diagrams are NOT accurately drawn, unless otherwise indicated.
•You must **show all your working out.**
•If the question is a **1F** question you are not allowed to use a calculator.
•If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

Information

•The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question*.

Advice

•Read each question carefully before you start to answer it.
•Keep an eye on the time.
•Try to answer every question.
•Check your answers if you have time at the end.

Answer ALL questions
Write your answers in the space provided.
You must write down all the stages in your working.

3 Solve $\frac{y}{4} = 10.5$

$y =$ .....

November 2017 – Paper 1F **(Total for Question 3 is 1 mark)**

3 Solve $\frac{x}{5} = 2\frac{1}{2}$

$x =$ .....

(1)

June 2017 – Paper 1F **(Total for Question 3 is 1 mark)**

5 Solve $p - 2 = 3$

$p =$ .....

June 2023 – Paper 1F **(Total for Question 5 is 1 mark)**

7 (a) Solve $f + 2f + f = 20$

$f =$ .....

(1)

(b) Solve $18 - m = 6$

$m =$ .....

(1)

Specimen 1 – Paper 3F **(Total for Question 7 is 2 marks)**

8 (a) Solve $m - 3 = 4$

$m =$ .....

(1)

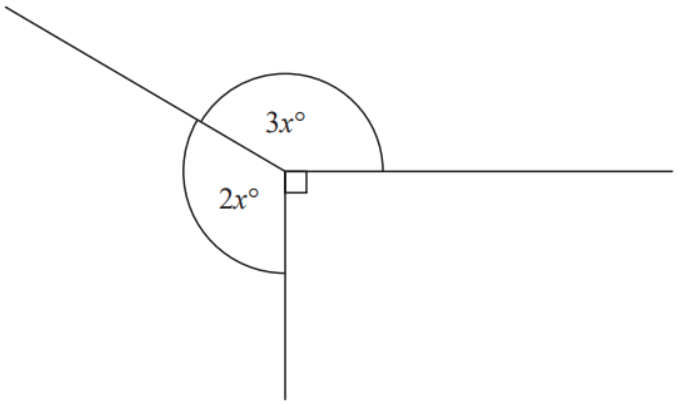
(b) Solve $3n + n = 24$

$n =$ .....

(2)

November 2022 – 1F **(Total for Question 8 is 3 marks)**

9



Find the value of x.

.....

June 2017 – Paper 2F **(Total for Question 9 is 3 marks)**

10 (a) Solve $3m = 36$

$m =$ .....

(1)

(b) Solve $7 - x = 3$

$x =$ .....

(1)

May 2020 – Paper 2F **(Total for Question 10 is 2 marks)**

10 (a) Solve $t + t + t = 12$

$t =$ .....

(1)

(b) Solve $x - 2 = 6$

$x =$ .....

(1)

(c) Solve $6w + 2 = 20$

$w =$ .....

(2)

June 2019 – Paper 1F **(Total for Question 10 is 4 marks)**

10 Solve $3x + 7 = 1$

$x =$ .....

(2)

Specimen 2 – Paper 1F **(Total for Question 10 is 2 marks)**

10 Solve $3x - 5 = 9$

$x =$ .....

(2)

Sample 1 – Paper 2F

(Total for Question 10 is 2 marks)

11 (a) Solve $x + x + x = 51$

$x =$ .....

(1)

(b) Solve $\frac{y}{4} = 3$

$y =$ .....

(1)

(c) Solve $2f + 7 = 18$

$f =$ .....

(1)

May 2018 – Paper 2F

(Total for Question 11 is 3 marks)

11 Gabriel thinks of a number.

He multiplies his number by 5 and then adds 7
His answer is 72

What number did Gabriel think of?

.....

June 2023 – Paper 3F **(Total for Question 11 is 3 marks)**

14 Solve $5(2m - 6) = 40$

m = ...

(3)

November 2022 – 2F **(Total for Question 14 is 3 marks)**

14 Solve $5p + 7 = 22$

$p =$ .....

(2)

May 2020 – Paper 3F **(Total for Question 14 is 2 marks)**

15 Solve $4x - 7 = 37$

$x =$ .....

(2)

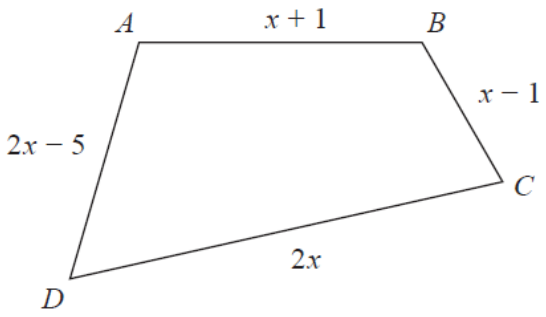
November 2021 – Paper 1F **(Total for Question 15 is 2 marks)**

16 Solve $\frac{x}{7} + 9 = 4$

$x =$ .....

November 2023 – Paper 3F **(Total for Question 16 is 2 marks)**

16 Here is a quadrilateral $ABCD$.



All the measurements are in centimetres.

The perimeter of $ABCD$ is 52 centimetres.

Work out the length of DC.

..... centimetres

November 2022 – 1F **(Total for Question 16 is 4 marks)**

16 Solve $3(m - 4) = 21$

$m =$ .....

(2)

May 2018 – Paper 1F **(Total for Question 16 is 2 marks)**

16 (a) Solve $4c + 5 = 11$

$c =$ .....

(2)

(b) Solve $5(e + 7) = 20$

$e =$ .....

(2)

Specimen 1 – Paper 2F **(Total for Question 16 is 4 marks)**

16 Solve $5x - 6 = 3(x - 1)$

$x =$ .....

November 2017 – Paper 2F **(Total for Question 16 is 3 marks)**

17 Solve $5p = 3p + 8$

$p =$ .....

(2)

Specimen 2 – Paper 2F **(Total for Question 17 is 2 marks)**

17 Solve $2(5x - 4) = 21$

$x =$ .....

(3)

November 2021 – Paper 3F **(Total for Question 17 is 3 marks)**

17 Solve $\frac{3y}{4} = 12$

$y =$ .....

(2)

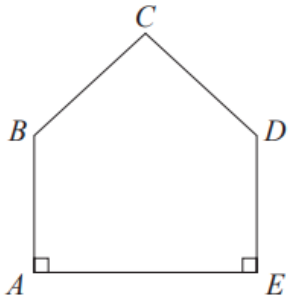
June 2022 – Paper 3F **(Total for Question 17 is 4 marks)**

17 Solve $2(4x - 5) = 18$

$x =$ .....

May 2024 – Paper 1F **(Total for Question 17 is 3 marks)**

17 The diagram shows a pentagon.
The pentagon has one line of symmetry.



$AE = 4x$
$AB = 2x + 1$
$BC = x + 2$

All these measurements are given in centimetres.

The perimeter of the pentagon is 18 cm.

(a) Show that $10x + 6 = 18$

(3)

(b) Find the value of x.

$x =$ .....

(2)

(Total for Question 17 is 5 marks)

18 Solve $4(2x - 3) = 20$

$x =$ .....

June 2023 – Paper 3F **(Total for Question 18 is 3 marks)**

19 Solve $7(f - 5) = 28$

$f =$ .....

(2)

May 2020 – Paper 1F **(Total for Question 19 is 2 marks)**

19 Solve $3(x - 4) = 12$

$x =$ .....

(2)

November 2018 – Paper 2F **(Total for Question 19 is 2 marks)**

19 Solve $4(x - 6) = 44$

$x =$ .....

November 2019 – Paper 3F **(Total for Question 19 is 2 marks)**

19 Solve $4(x - 5) = 18$

$x =$ .....

(2)

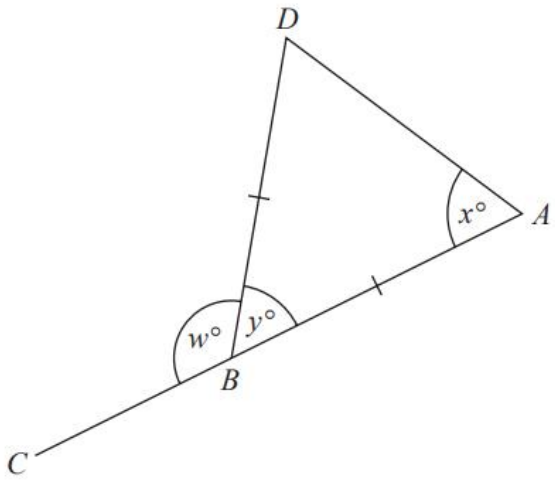
June 2017 – Paper 1F **(Total for Question 19 is 2 marks)**

19 Solve $4x + 5 = x + 26$

$x =$ .....

Sample 1 – Paper 1F **(Total for Question 19 is 2 marks)**

23 The diagram shows an isosceles triangle ABD and the straight line ABC.



$BA = BD$

$x : y = 2 : 1$

Work out the value of w.

$w =$ .....

(Total for Question 23 is 4 marks)

24 Mano has three shelves of books.

There are x books on shelf **A**.
There are $(3x + 1)$ books on shelf **B**.
There are $(2x - 5)$ books on shelf **C**.

There is a total of 44 books on the three shelves.

All the books have the same mass.

The books on shelf **B** have a total mass of 7500 g.

Work out the total mass of the books on shelf **A**.

..... g

(Total for Question 24 is 5 marks)

24 Solve $2x^2 = 72$

.....

(2)

November 2017 – Paper 2F **(Total for Question 24 is 2 marks)**

24 Solve $x^2 + 5x - 24 = 0$

.....

June 2017 – Paper 2F **(Total for Question 24 is 3 marks)**

25 Solve $5x - 14 = 52 - x$

$x =$ .....

November 2023 – Paper 2F

(Total for Question 25 is 3 marks)

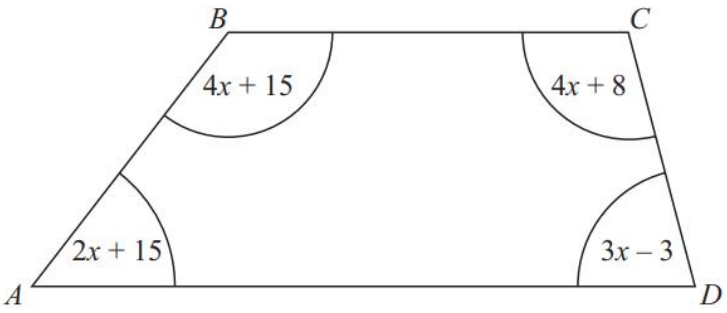
25 Solve $\dfrac{5 - x}{2} = 2x - 7$

$x =$ .....

May 2018 – Paper 3F

(Total for Question 25 is 3 marks)

26 *ABCD* is a quadrilateral.



All angles are measured in degrees.

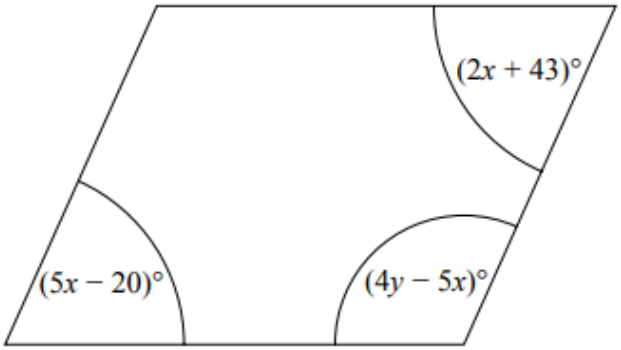
Show that *ABCD* is a trapezium.

June 2024 – Paper 2F **(Total for Question 26 is 4 marks)**

27 Solve $x^2 - 7x - 18 = 0$

November 2021 – Paper 1F **(Total for Question 27 is 3 marks)**

28 Here is a parallelogram.



Work out the value of x and the value of y.

$x =$ .....

$y =$ .....

(Total for Question 28 is 5 marks)