Name ANSWERS	Class

MATHS TEACHER HUB

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Fractions

(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.

1 $\frac{2}{7} + \square = 1$

$\frac{5}{7}$

(1)

November 2018 – Paper 3F

(Total for Question 1 is 1 mark)

2 Write a fraction in the box to make the calculation correct.

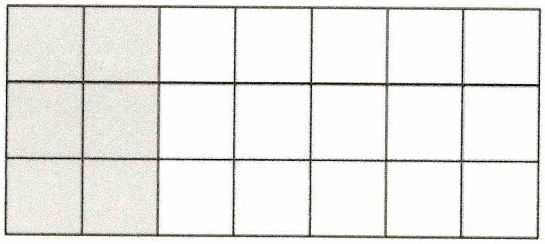
$1 - \frac{3}{10} = \square$

$\frac{7}{10}$

June 2022 – Paper 2F

(Total for Question 2 is 1 mark)

4 Here is a grid of squares.



What fraction of the grid is shaded?

$\frac{6}{21}$ or $\frac{2}{7}$

November 2024 – Paper 3F

(Total for Question 4 is 1 mark)

4 Here is a list of four fractions.

$\frac{4}{16}$ $\frac{2}{8}$ $\frac{15}{60}$ $\frac{3}{9}$

One of these fractions is **not** equivalent to $\frac{1}{4}$

Write down this fraction.

$\frac{3}{9}$

May 2018 – Paper 1F

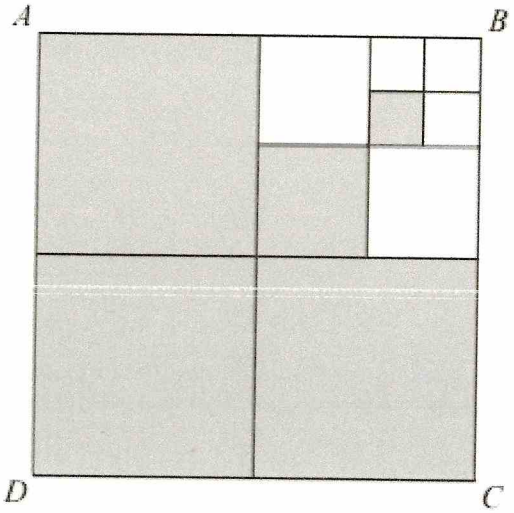
(Total for Question 4 is 1 mark)

4 Write the fraction $\frac{28}{70}$ in its simplest form.

$\frac{2}{5}$

November 2019 – Paper 1F **(Total for Question 4 is 1 mark)**

7 *ABCD* is a square.
This diagram is drawn accurately.



What fraction of the square *ABCD* is shaded?

$\frac{3}{4} + \frac{1}{16} + \frac{1}{64}$

$\frac{48}{64} + \frac{4}{64} + \frac{1}{64} = \frac{53}{64}$

$\frac{53}{64}$

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

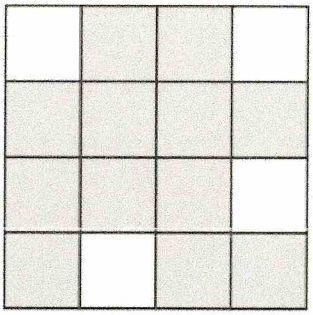
7 Harry has 20 sweets.
He gives 7 of the sweets to Nadia.

What fraction of the 20 sweets does Harry have now?

$\frac{13}{20}$

November 2019 – Paper 2F **(Total for Question 7 is 2 marks)**

7



What fraction of the shape is shaded?
Give your answer in its simplest form.

$\frac{12}{16} = \frac{3}{4}$

May 2020 – Paper 3F **(Total for Question 7 is 2 marks)**

8 (a) Work out $\frac{5}{8} \times \frac{3}{4}$

$\frac{15}{32}$

(1)

(b) Work out $\frac{2}{3} - \frac{1}{4}$

$\frac{8}{12} - \frac{3}{12}$

$\frac{5}{12}$

(2)

(Total for Question 8 is 3 marks)

9 Here are five fractions.

$$\frac{2}{8} \quad \frac{10}{40} \quad \frac{12}{48} \quad \frac{5}{24} \quad \frac{20}{80}$$

One of these fractions is **not** equivalent to $\frac{1}{4}$

(a) Write down this fraction.

$\frac{5}{24}$

(1)

(b) Work out $\frac{2}{7} + \frac{1}{14}$

$\frac{4}{14} + \frac{1}{14}$

$\frac{5}{14}$

(2)

(c) Work out $\frac{4}{5} \div \frac{3}{10}$

Give your answer in its simplest form.

$\frac{8}{10} \div \frac{3}{10} = \frac{8}{3}$

$2\frac{2}{3}$

(2)

(Total for Question 9 is 5 marks)

11 Here are some fractions.

$\frac{9}{12}$ $\frac{6}{8}$ $\frac{18}{24}$ $\frac{10}{16}$ $\frac{15}{20}$

One of these fractions is **not** equivalent to $\frac{3}{4}$

(a) Which fraction?

$\frac{10}{16}$

(1)

(b) Work out $\frac{1}{12} + \frac{5}{6}$

$\frac{1}{12} + \frac{10}{12}$

$\frac{11}{12}$

(2)

(Total for Question 11 is 3 marks)

12 (a) Work out $\frac{5}{12} + \frac{1}{6}$

$\frac{5}{12} + \frac{2}{12}$

$\frac{7}{12}$

(2)

(b) Work out $\frac{3}{10} \times \frac{5}{8}$

Give your answer as a fraction in its simplest form.

$\frac{15}{80} = \frac{3}{16}$

$\frac{3}{16}$

(2)

June 2022 – Paper 1F **(Total for Question 12 is 4 marks)**

12 Find the number that is exactly halfway between $\frac{1}{10}$ and $\frac{3}{5}$

$\frac{1}{10} + \frac{3}{5} = \frac{7}{10}$

$\frac{7}{10} \div 2 = \frac{7}{20}$

$\frac{7}{20}$

November 2019 – Paper 2F **(Total for Question 12 is 2 marks)**

15 Work out $\frac{6}{7} \times \frac{5}{12}$

Give your answer as a fraction in its simplest form.

$\frac{30}{84} = \frac{15}{42} = \frac{5}{14}$

$\frac{5}{14}$

June 2023 – Paper 1F

(Total for Question 15 is 2 marks)

17 Work out $\frac{3}{5} \div \frac{1}{6}$

Give your answer as a mixed number.

$\frac{18}{30} \div \frac{5}{30} = \frac{18}{5}$

$3\frac{1}{5}$

November 2023 – Paper 1F

(Total for Question 17 is 3 marks)

18 (a) Work out $\frac{2}{7} + \frac{1}{5}$

$\frac{10}{35} + \frac{7}{35} = \frac{17}{35}$

$\frac{17}{35}$

(2)

(b) Work out $1\frac{2}{3} \div \frac{3}{4}$

$\frac{5}{3} \div \frac{3}{4}$

$\frac{20}{12} \div \frac{9}{12} = \frac{20}{9}$

$2\frac{2}{9}$

(2)

(Total for Question 18 is 4 marks)

19 Lethna worked out $\frac{2}{5} + \frac{1}{2}$

She wrote:

$$\frac{2}{5} + \frac{1}{2} = \frac{2}{10} + \frac{1}{10} = \frac{3}{10}$$

The answer of $\frac{3}{10}$ is wrong.

(a) Describe one mistake that Lethna made.

She should have changed $\frac{2}{5}$ in to $\frac{4}{10}$ and $\frac{1}{2}$ in to $\frac{5}{10}$

(1)

Dave worked out $1\frac{1}{2} \times 5\frac{1}{3}$

He wrote:

$$1 \times 5 = 5 \quad \text{and} \quad \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$

$$\text{so} \quad 1\frac{1}{2} \times 5\frac{1}{3} = 5\frac{1}{6}$$

The answer of $5\frac{1}{6}$ is wrong.

(b) Describe one mistake that Dave made.

You have to convert to improper fractions first

(1)

(Total for Question 19 is 2 marks)

19 (a) Work out $\frac{2}{3} - \frac{1}{5}$

$\frac{10}{15} - \frac{3}{15} = \frac{7}{15}$

$\frac{7}{15}$

(2)

(b) Work out $\frac{2}{3} \times \frac{3}{4}$

Give your answer as a fraction in its simplest form.

$\frac{6}{12}$

$\frac{1}{2}$

(2)

June 2019 – Paper 1F **(Total for Question 19 is 4 marks)**

19 (a) Work out $2\frac{1}{7} + 1\frac{1}{4}$

$\frac{15}{7} + \frac{5}{4}$

$\frac{60}{28} + \frac{35}{28} = \frac{95}{28}$

$3\frac{11}{28}$

(2)

(b) Work out $1\frac{1}{5} \div \frac{3}{4}$

Give your answer as a mixed number in its simplest form.

$\frac{6}{5} \div \frac{3}{4}$

$\frac{24}{20} \div \frac{15}{20} = \frac{24}{15} = \frac{8}{5}$

$1\frac{3}{5}$

(2)

(Total for Question 19 is 4 marks)

20 (a) Work out $1\frac{3}{5} + 2\frac{1}{4}$

Give your answer as a mixed number.

$\frac{8}{5} + \frac{9}{4}$

$\frac{32}{20} + \frac{45}{20} = \frac{77}{20}$

$3\frac{17}{20}$

(2)

(b) Show that $2\frac{2}{3} \div 6 = \frac{4}{9}$

$\frac{8}{3} \div \frac{6}{1}$

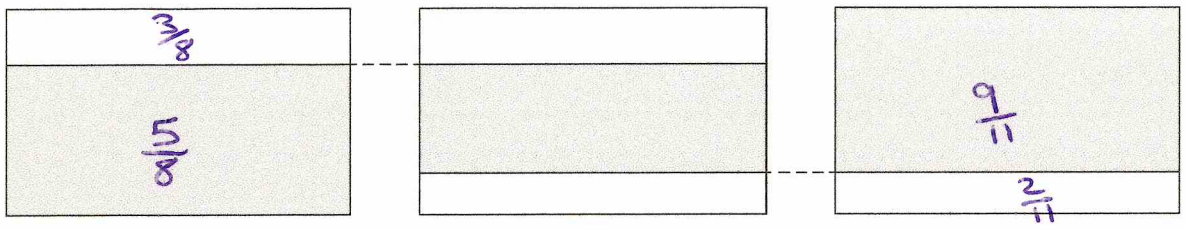
$\frac{8}{3} \div \frac{18}{3} = \frac{8}{18}$

$= \frac{4}{9}$

(2)

(Total for Question 20 is 4 marks)

20 The diagram shows three identical rectangles **A**, **B** and **C**.



Rectangle **A** Rectangle **B** Rectangle **C**

$\frac{5}{8}$ of rectangle **A** is shaded.

$\frac{9}{11}$ of rectangle **C** is shaded.

Work out the fraction of rectangle **B** that is shaded.

$1 - \frac{3}{8} - \frac{2}{11}$

$\frac{8}{8} - \frac{3}{8} = \frac{5}{8}$

$\frac{5}{8} - \frac{2}{11}$

$\frac{55}{88} - \frac{16}{88} = \frac{39}{88}$

$\frac{39}{88}$

(Total for Question 20 is 3 marks)

21 Work out $7\frac{3}{8} - 2\frac{1}{2}$

Give your answer as a mixed number.

$\frac{59}{8} - \frac{5}{2}$

$\frac{59}{8} - \frac{20}{8} = \frac{39}{8}$

$4\frac{7}{8}$

June 2023 – Paper 1F **(Total for Question 21 is 3 marks)**

21 Show that $2\frac{1}{3} \times 3\frac{3}{4} = 8\frac{3}{4}$

$\frac{7}{3} \times \frac{15}{4} = \frac{105}{12}$

$= \frac{35}{4}$

$= 8\frac{3}{4}$

May 2020 – Paper 1F **(Total for Question 21 is 3 marks)**

21 (a) Work out $3\frac{4}{5} - 1\frac{2}{3}$

$\frac{19}{5} - \frac{5}{3}$

$\frac{57}{15} - \frac{25}{15} = \frac{32}{15}$

$2\frac{2}{15}$

(2)

Kevin was asked to work out $2\frac{1}{3} \times \frac{5}{8}$

Here is his working and his answer.

$$2\frac{1}{3} \times \frac{5}{8} = \frac{7}{3} \times \frac{5}{8}$$

$$= \frac{35}{24}$$

$$= 1\frac{9}{24}$$

Kevin's answer is wrong.

(b) What mistake has Kevin made?

$\frac{35}{24} = 1\frac{11}{24}$

(1)

(Total for Question 21 is 3 marks)

22 Work out $4\frac{1}{5} - 2\frac{2}{3}$

Give your answer as a mixed number.

$\frac{21}{5} - \frac{8}{3}$

$\frac{63}{15} - \frac{40}{15} = \frac{23}{15}$

$1\frac{8}{15}$

November 2021 – Paper 1F

(Total for Question 22 is 3 marks)

22 Work out $1\frac{3}{4} \times 1\frac{1}{3}$

Give your answer as a mixed number.

$\frac{7}{4} \times \frac{4}{3} = \frac{28}{12}$

$= \frac{14}{6}$

$= \frac{7}{3}$

$2\frac{1}{3}$

November 2019 – Paper 1F

(Total for Question 22 is 3 marks)

22 (a) Work out $\frac{2}{5} + \frac{1}{4}$

$\frac{8}{20} + \frac{5}{20} = \frac{13}{20}$

$\frac{13}{20}$

.....

(2)

(Total for Question 22 is 2 marks)