# Fractions

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

| Name: | |
|---|---|
| Total Marks: | |

1. Find $\frac{1}{4}$ of 16.

.................................. [1]

2. Emma has done some calculations.

   Explain how you know the answer is wrong without working out the correct answer.

$$\frac{3}{4} + \frac{2}{3} = \frac{5}{7}$$

[1]

3. In a box of 12 eggs, 5 are cracked.

   What fraction is cracked?

.................................................... [1]

4. Work out.

$$\frac{3}{7} + \frac{4}{5}$$

   Give your answer as a mixed number.

.................................................... [3]

5. Find a fraction between $\frac{1}{4}$ and $\frac{1}{3}$

.................................. [2]

6. Jemma has a bag containing 24 balls.

   The probability that a ball taken from the bag at random is green is 1/3

   How many of the 24 balls are green?

   ..................................... [2]

7. Circle the fraction that is not equivalent to $\frac{3}{8}$

$$\frac{6}{16} \qquad \frac{9}{24} \qquad \frac{12}{32} \qquad \frac{15}{35}$$

[1]

8. Complete the table.

| Minutes | Hours |
|---------|-------|
| 30 | $\frac{1}{2}$ |
| 40 | |
| | $2\frac{1}{4}$ |

[2]

9. Write 180 g as a fraction of 3 kg

   Give your answer in its simplest form.

[2]

10. Work out $2\frac{3}{4} \times 1\frac{5}{7}$

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

[3]

11. Write 0.037 as a fraction.

[1]

12. There are only black pens and green pens in a box.

The ratio of the number of black pens in the box to the number of green pens in the boxis 2 : 5

What fraction of the pens are black?

....................................................... [1]

13. Sam buys 20 boxes of oranges.

There are 25 oranges in each box.

Each boxes of oranges costs £7

Sam sells $\frac{2}{5}$ of the oranges he bought.

He sells each of these oranges for 40p.

He then sells each of the remaining oranges at 3 oranges for 50p.

Did Sam make a profit or did Sam make a loss?
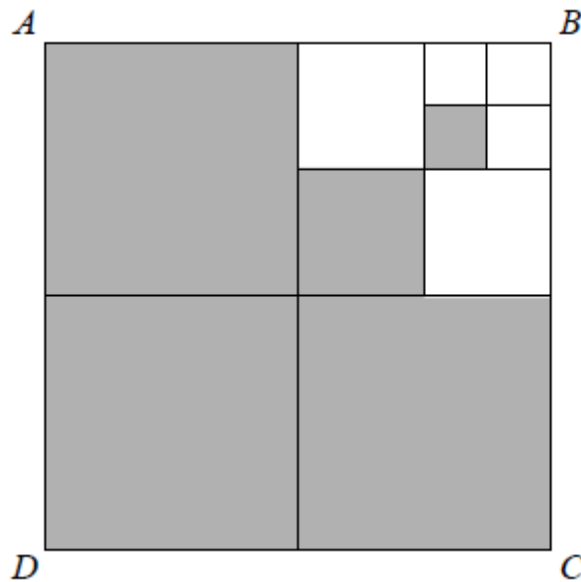
You must show working to justify your answer.

[5]

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

...........................................................................

[2]

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

...........................................................................

[2]

15. ABCD is a square.



This diagram is drawn accurately.

What fraction of the square ABCD is shaded?

.................................................. [2]

16.  There are 25 boys and 32 girls in a club.

$\dfrac{2}{5}$ of the boys and

$\dfrac{1}{2}$ of the girls walk to the club.

The club leader picks at random a child from the children who walk to the club.

Work out the probability that this child is a boy.

................................................... [3]

17. Here are five fractions.

$$\dfrac{2}{8} \qquad \dfrac{10}{40} \qquad \dfrac{12}{48} \qquad \dfrac{5}{24} \qquad \dfrac{20}{80}$$

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

(a) Write down this fraction.

......................................... [1]

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

......................................... [2]

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

Give your answer in its simplest form.

......................................... [2]

18.

<div style="border:1px solid black; text-align:center;">

**Living to 100 years old**

1 in 3 babies born last year
are expected to live
to 100 years old

</div>

720 000 babies were born last year.

How many of these babies are expected to live to 100 years old?

.................................................... [2]

19. There are 35 pens in a box.

15 of the pens are green.

The rest of the pens are red.

What fraction of the pens in the box are red?

.................................................. [1]

20. 120 men and 80 women were asked if they drive to work.

Altogether $\frac{1}{4}$ of the people said yes.

$\frac{1}{3}$ of the men said yes.

What fraction of the women said yes?

[4]

21. In Scotland, squirrels are red or grey in the ratio red : grey $= 1 : 2\frac{1}{2}$

What fraction of the squirrels in Scotland are red?

[2]

22. There are 20 students.

12 are boys.

What fraction are boys? Circle your answer.

[1]

$\frac{2}{3}$ $\qquad$ $\frac{2}{5}$ $\qquad$ $\frac{3}{5}$ $\qquad$ $\frac{3}{4}$

23. Which of $\frac{2}{5}$ or $\frac{5}{8}$ is closer in value to $\frac{1}{2}$ ?

You must show your working.

[3]

24. A drink is mixed in the ratio

   lemonade : orange : cranberry = 6 : 3 : 2

What fraction is orange?

Circle your answer.

[1]

$$\frac{3}{8} \qquad \frac{2}{11} \qquad \frac{3}{11} \qquad \frac{6}{11}$$

25. Jody's pay is £315 per week.

She works for $37\frac{1}{2}$

Work out her hourly rate of pay.

[2]

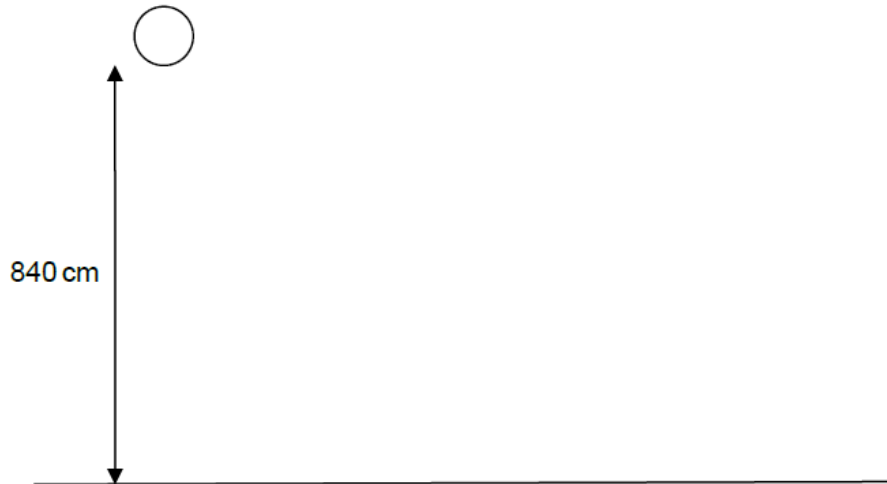26. What is one quarter of 5 hours?

Tick a box.

1 hour 15 minutes ☐

115 minutes ☐

1 hour 25 minutes ☐

125 minutes ☐

[1]

27. A ball is dropped from a height of 840 cm onto a floor.

840 cm

After each bounce it rises to a height that is half of the distance it has just fallen.

After how many bounces will the ball fail to reach a height of 1m for the first time?

You must show all your working.

[3]

28. In a school, $\frac{3}{5}$ of the pupils are girls.

There are 390 girls in the school.

Calculate the total number of pupils in the school.

[3]

29. Faizal has £400.

He spends $\frac{1}{4}$ of it on rent and $\frac{2}{5}$ of it on food.

What fraction does he have left?

Write your answer in its simplest terms.

[4]

30. One sheet of A3 card has area $\frac{1}{8}$ m²

    The card has a mass of 160 g per m²

    Work out the total mass of 25 sheets of A3 card

    [4]

31. How many minutes are there in $3\frac{1}{4}$ hours?

    .......................................... minutes [1]

32. Here are four fractions.

$$\frac{1}{2} \qquad \frac{17}{24} \qquad \frac{3}{4} \qquad \frac{5}{12}$$

    Write these fractions in order of size.

    Start with the smallest fraction.

    [2]

33. Work out $\frac{4}{5}$ of 210 cm.

    ..................................................... cm [1]

34. 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.

    [1]

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

He wrote:

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

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

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

(b) Describe one mistake that Dave made.

[1]

# CREDITS AND NOTES

| Q | Awarding Body | Q | Awarding Body | Q | Awarding Body |
|---|---|---|---|---|---|
| 1 | OCR | 13 | Pearson Edexcel | 25 | AQA |
| 2 | OCR | 14 | Pearson Edexcel | 26 | AQA |
| 3 | OCR | 15 | Pearson Edexcel | 27 | WJEC Eduqas |
| 4 | OCR | 16 | Pearson Edexcel | 28 | WJEC Eduqas |
| 5 | OCR | 17 | Pearson Edexcel | 29 | WJEC Eduqas |
| 6 | OCR | 18 | Pearson Edexcel | 30 | Pearson Edexcel |
| 7 | AQA | 19 | Pearson Edexcel | 31 | Pearson Edexcel |
| 8 | AQA | 20 | AQA | 32 | Pearson Edexcel |
| 9 | AQA | 21 | AQA | 33 | Pearson Edexcel |
| 10 | AQA | 22 | AQA | 34 | Pearson Edexcel |
| 11 | Pearson Edexcel | 23 | AQA | | |
| 12 | Pearson Edexcel | 24 | AQA | | |

## Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board s (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.

## Links:

AQA http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300

OCR http://ocr.org.uk/gcsemaths

Pearson Edexcel http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html

WJEC Eduqas http://www.eduqas.co.uk/qualifications/mathematics/gcse/

## Contents:

This version contains questions from:

AQA – Sample Assessment Material and Practice set 1

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2.

WJEC Eduqas – Sample Assessment Material