THIRD SPACE LEARNING

KS2 Fractions, Decimals and Percentages Quiz

Diagnose learning gaps with 25 multiple choice questions and answers

Fractions, Decimals and Percentages Quiz

Please tick your answer to each question.
You can use the space on the right for your working out if you need it.

Don't forget to tick your answer!

1. What fraction is shaded?

a) ☐ $\frac{1}{3}$

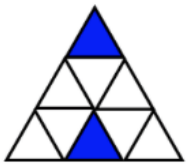
b) ☐ $\frac{3}{1}$

c) ☐ $\frac{1}{4}$

d) ☐ $\frac{3}{4}$

2. Which shape shows $\frac{2}{9}$ shaded in?

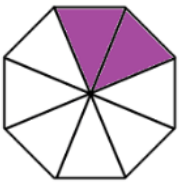
a) ☐



c) ☐

b) ☐

d) ☐



3. What fraction of the shape is shaded? Select the equivalent fraction below.

a) ☐ $\frac{2}{5}$

b) ☐ $\frac{3}{2}$

c) ☐ $\frac{9}{15}$

d) ☐ $\frac{6}{4}$

4. What is the denominator?

a) ☐ It is the top number and it shows how many parts we are looking at (shaded parts)

b) ☐ It is the bottom number and shows us how many equal parts there are

c) ☐ It is the top number and it shows us how many equal parts there are

d) ☐ It is the bottom number and it shows us how many parts we are looking at (shaded parts)

5. What is the numerator?

a) ☐ It is the top number and it shows how many parts we are looking at (shaded parts)

b) ☐ It is the bottom number and shows us how many equal parts there are

c) ☐ It is the top number and it shows us how many equal parts there are

d) ☐ It is the bottom number and it shows us how many parts we are looking at (shaded parts)

6. What is $\frac{21}{42}$ in its simplest form?

a) ☐ $\frac{3}{6}$

b) ☐ $\frac{7}{6}$

c) ☐ $\frac{5}{9}$

d) ☐ $\frac{1}{2}$

7. $\frac{3}{7} + \frac{2}{7}$

a) ☐ $\frac{5}{14}$

b) ☐ $\frac{6}{14}$

c) ☐ $\frac{5}{7}$

d) ☐ $\frac{10}{9}$

8. $\frac{6}{13} - \frac{5}{13}$

a) ☐ $\frac{1}{13}$

b) ☐ 1

c) ☐ $\frac{1}{0}$

d) ☐ $\frac{7}{8}$

Don't forget to tick your answer!

9. Write $\frac{21}{8}$ as a mixed number

a) ☐ 3

b) ☐ 2

c) ☐ $2\frac{5}{8}$

d) ☐ $2\frac{1}{5}$

10. $\frac{4}{5} + \frac{3}{20}$

a) ☐ $\frac{8}{24}$

b) ☐ $\frac{7}{25}$

c) ☐ $\frac{19}{20}$

d) ☐ $\frac{9}{23}$

11. $\frac{12}{18} - \frac{2}{9}$ = (Write your answer in the simplest form)

a) ☐ $\frac{8}{18}$

b) ☐ $\frac{6}{7}$

c) ☐ $\frac{10}{9}$

d) ☐ $\frac{4}{9}$

12. $3\frac{4}{7} + 2\frac{5}{7}$

a) ☐ $5\frac{9}{14}$

b) ☐ $6\frac{2}{7}$

c) ☐ $5\frac{9}{7}$

d) ☐ $\frac{44}{7}$

13. $3\frac{4}{5} - 1\frac{2}{5} =$ (Write as an improper fraction)

a) ☐ $\frac{22}{5}$

b) ☐ $2\frac{2}{5}$

c) ☐ $\frac{12}{5}$

d) ☐ 2

14. What is $\frac{1}{100}$ written as a decimal?

a) ☐ 0.1

b) ☐ 100

c) ☐ 0.01

d) ☐ 0.001

15. What is 0.23 as a fraction?

a) ☐ $\frac{23}{10}$

b) ☐ $\frac{1}{23}$

c) ☐ $\frac{23}{100}$

d) ☐ $\frac{23}{1000}$

16. Henry has 147 marbles. He gives $\frac{2}{3}$ of them to James. How many marbles has he got left?

a) ☐ 49 marbles

b) ☐ 98 marbles

c) ☐ 27 marbles

d) ☐ 73 marbles

17. $\frac{4}{7} \times 3 =$

a) ☐ $\frac{12}{7}$

b) ☐ $\frac{12}{21}$

c) ☐ $\frac{4}{21}$

d) ☐ $3\frac{4}{7}$

18. Find 30% of £5

a) ☐ 15p

b) ☐ £35

c) ☐ £0.50

d) ☐ £1.50

19. Which one is the odd one out?

a) ☐ 0.4

b) ☐ $\frac{2}{5}$

c) ☐ $\frac{40}{10}$

d) ☐ 40%

20. Order these numbers in ascending order (from smallest to biggest):

$\frac{4}{3}$ 60% 0.192

a) ☐ 0.192 $\frac{4}{3}$ 60%

b) ☐ $\frac{4}{3}$ 60% 0.192

c) ☐ 0.192 60% $\frac{4}{3}$

d) ☐ 60% $\frac{4}{3}$ 0.192

Don't forget to tick your answer!

21. Find 5% of 1kg
(There are two possible correct answers to this one)

a) ☐ 0.5kg

b) ☐ 50g

c) ☐ 5g

d) ☐ 0.05kg

22. $\frac{14}{21} \div 7$

a) ☐ 5

b) ☐ $\frac{5}{21}$

c) ☐ $\frac{2}{21}$

d) ☐ $\frac{2}{3}$

23. $\frac{3}{5} \times \frac{2}{3}$

a) ☐ $\frac{9}{10}$

b) ☐ $\frac{10}{9}$

c) ☐ $\frac{6}{8}$

d) ☐ $\frac{6}{15}$

24. 3.74 x 8

a) ☐ 2992

b) ☐ 29.92

c) ☐ 299.2

d) ☐ 2.992

25. Write $\frac{3}{8}$ as a decimal number (decimal fraction)

a) ☐ 0.38

b) ☐ 3.8

c) ☐ 2.66

d) ☐ 0.375

Congratulations on finishing the quiz.
You've worked really hard to get this far. Well done!

Don't forget to tick your answer!

1. What fraction is shaded? *Checks basic understanding of fractions of a shape*

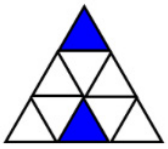
a) $\frac{1}{3}$ ***Pupil perceives this as 1 white part out of 3 blue parts – lacks understanding of the numerator and the denominator***

b) $\frac{3}{1}$ ***Pupil perceives this as 3 blue parts and 1 white part – lacks understanding of the numerator and denominator***

c) $\frac{1}{4}$ ***Pupil has correctly identified the white part but not the three blue shaded parts***

d) $\frac{3}{4}$ **Correct answer**

2. Which shape shows $\frac{2}{9}$ shaded in? *Checks for basic fraction understanding in a shape*

a)  **Correct answer**

b)  ***Misconception – pupil sees the numerator as the number of shaded parts and the denominator as the number of remaining unshaded parts***

c)  ***Misconception – pupil has counted the unshaded parts as being $\frac{2}{9}$ which is correct. Pupil needs to read the question more carefully***

d)  ***Pupil can see 2 shaded parts, but may have miscounted the total number of parts. Checks for understanding of equivalence***

3. What fraction of the shape is shaded? Circle the equivalent fraction below
Checks for understanding of equivalenced

a) $\frac{2}{5}$ ***Misconception – pupil has counted the unshaded parts of the shape. Pupil may be aware that the denominator show how many parts make the whole.***

b) $\frac{3}{2}$ ***Misconception – pupil does not understand that the fraction bar (—) means 'out of the whole shape/amount'. Pupil has counted the shaded parts of the shape correctly though***

c) $\frac{9}{15}$ **Correct answer**

d) $\frac{6}{4}$ ***Pupil may have some understanding of equivalence, but misconceptions lie with not understanding that the denominator is the number of equal parts in the whole***

4. What is the denominator?
Checks understanding of the vocabulary linked to fractions

a) It is the top number and it shows how many parts we are looking at (shaded parts)
Pupils has confused the denominator with the numerator

b) It is the bottom number and shows us how many equal parts there are
Correct answer

c) It is the top number and it shows us how many equal parts there are
May understand that the denominator shows the number of equal parts but thinks that the top number represents this

d) It is the bottom number and it shows us how many parts we are looking at (shaded parts)
May understand that the denominator is the bottom number but thinks that this shows the number of parts we need to look at

5. What is the numerator?
Checks understanding of the vocabulary linked to fractions

a) It is the top number and it shows how many parts we are looking at (shaded parts)
Correct answer

b) It is the bottom number and shows us how many equal parts there are
Pupils has confused the denominator with the numerator

c) It is the top number and it shows us how many equal parts there are
May understand that the numerator is the top number but thinks that this shows the number of equal parts there are

d) It is the bottom number and it shows us how many parts we are looking at (shaded parts)
May understand that the numerator shows the number of parts we are looking at but thinks that the bottom number represents this

6. What is $\frac{21}{42}$ in its simplest form? *Checks converting equivalent fractions to its simplest form*

a) $\frac{3}{6}$ ***Although answer is correct, it is not written in its simplest form – can find equivalent fractions***

b) $\frac{7}{6}$ ***Pupil has divided the numerator by 3 and the denominator by 7 – unclear how to find equivalence***

c) $\frac{5}{9}$ ***Random answer – lacks understanding of equivalence***

d) $\frac{1}{2}$ **Correct answer**

7. $\frac{3}{7} + \frac{2}{7}$ *Checks adding fractions with the same denominators*

a) $\frac{5}{14}$ ***Misconception – adding the numerators and the denominators. Pupil has not understood the concept of '3 lots of sevenths plus 2 lots of sevenths'***

b) $\frac{6}{14}$ ***Misconception – multiplying the numerators and adding the denominators. Pupil has not understood the concept of '3 lots of sevenths plus 2 lots of sevenths'***

c) $\frac{5}{7}$ **Correct answer**

d) $\frac{10}{9}$ ***Random answer – pupil does not understand addition of fractions***

8. $\frac{6}{13} - \frac{5}{13}$ *Checks subtracting fractions with the same denominators*

a) $\frac{1}{13}$ **Correct answer**

b) 1 ***Misconception – subtracting the numerators and the denominators. Pupil has not understood the concept of '6 lots of thirteenths minus 5 lots of thirteenths'***

c) $\frac{1}{0}$ ***Misconception – subtracting the numerators and the denominators. Pupil has not understood the concept of '6 lots of thirteenths minus 5 lots of thirteenths'***

d) $\frac{7}{8}$ ***Random answer – pupil does not understand subtraction of fractions***

9. Write $\frac{21}{8}$ as a mixed number *Checks expressing an improper fraction as a mixed number*

a) 3 ***May have some idea that $\frac{21}{8}$ is about 3 but unsure what a mixed number is or how to work it out***

b) 2 ***May have some idea that $\frac{21}{8}$ is about 2 but unsure what a mixed number is or how to work it out***

c) $2\frac{5}{8}$ **Correct answer**

d) $2\frac{1}{5}$ ***Remainder is 5 – pupils simply puts it as a denominator – lack of understanding about the denominator being a noun – it is what those parts are called, in this case 'eighths'***

10. $\frac{4}{5} + \frac{3}{20} =$ *Checks adding fractions where one denominator is a factor of the other*

a) $\frac{8}{24}$ ***Pupil lacks understanding of how to add fractions with different denominators – pupil has added diagonally***

b) $\frac{7}{25}$ ***Pupils has added the numerators and the denominators – lacks understanding that fractions can only be subtracted when denominators are the same and therefore equivalence needs to be used first***

c) $\frac{19}{20}$ **Correct answer**

d) $\frac{9}{23}$ ***Pupil has added the digits in the fraction vertically and then combined them***

11. $\frac{12}{18} - \frac{2}{9} =$ Write your answer in the simplest form

Checks subtracting fractions where one denominator is a factor of the other

a) $\frac{8}{18}$ ***Correct but not written in the simplest form***

b) $\frac{6}{7}$ ***Pupil has subtracted vertically and then combined – lacks understanding of equivalence or what the fractions mean***

c) $\frac{10}{9}$ ***Pupil has subtracted horizontally both the numerator and the denominator – lacks understanding of subtracting fractions***

d) $\frac{4}{9}$ **Correct answer**

12. $3\frac{4}{7} + 2\frac{5}{7}$

Checks adding of mixed numbers with the same denominator and then writing the answer as the simplest mixed number

a) $5\frac{9}{14}$ ***Misconception of adding fractions with the same denominators – pupil lacks understanding of the denominator being a 'noun' (name of the part)***

b) $6\frac{2}{7}$ **Correct answer**

c) $5\frac{9}{7}$ ***Correct but not written as the simplest mixed number***

d) $\frac{44}{7}$ ***Correct but not written as the simplest mixed number***

13. $3\frac{4}{5} - 1\frac{2}{5} =$ *(Write as an improper fraction) Checks subtracting mixed numbers with the same denominator*

a) $\frac{22}{5}$ ***Pupil has combined the whole number with the numerator in each fraction and then subtracted***

b) $2\frac{2}{5}$ ***Correct answer but not written as an improper fraction***

c) $\frac{12}{5}$ **Correct answer**

d) 2 ***Pupil has not taken into account the fraction part of each number and simply subtracted the whole numbers***

14. What is $\frac{1}{100}$ written as a decimal? *Checks understanding of links between fractions and decimals*

a) 0.1
Misconception with place value, but may have some understanding of the fraction bar (–) meaning 'divided by' here

b) 100
Misconception with place value – unsure what a decimal is

c) 0.01
Correct answer

d) 0.001
Misconception with place value, but may have some understanding of the fraction bar (–) meaning 'divided by' here

15. What is 0.23 as a fraction? *Checks understanding of links between decimals and fractions*

a) $\frac{23}{10}$ ***Misconception with place value – pupil may 'see' 0.23 as 23 tenths and not as 23 hundredths***

b) $\frac{1}{23}$ ***Misconception – lacks understanding that the fraction bar (–) can also mean 'divided by'***

c) $\frac{23}{100}$ **Correct answer**

d) $\frac{23}{1000}$ ***Misconception with place value – 23 thousandths instead of 23 hundredths***

16. Henry has 147 marbles. He gives $\frac{2}{3}$ of them to James. How many marbles has he got left?

Checks finding a fraction of an amount in context

a) 49 marbles
Correct answer

b) 98 marbles
Pupil has worked out $\frac{2}{3}$ of 147 accurately, but has not answered the question

c) 27 marbles
Random answer – pupil does not understand the question or how to find a fraction of an amount

d) 73 marbles
Pupil has tried to divide the number of marbles by the numerator

17. $\frac{4}{7} \times 3 =$ *Checks multiplying a fraction by a whole number*

a) $\frac{12}{7}$ **Correct answer**

b) $\frac{12}{21}$ ***Pupil has multiplied both the numerator and the denominator by 3 – misconception: pupil does not understand the concept that you have '4 lots of sevenths, three times'***

c) $\frac{4}{21}$ ***Pupil has multiplied the denominator by 3 – lacks understanding of the denominator being the 'name' of the fraction***

d) $3\frac{4}{7}$ ***Pupil has added on the 3 instead of multiplied***

18. Find 30% of £5

Checks finding a percentage of an amount in context

a) 15p
Has found 3% and not 30%

b) £35
Random answer – pupil has little understanding of finding percentages of an amount

c) £0.50
Pupil has found 10%, but maybe unsure what to do next.

d) £1.50
Correct answer

19. Which one is the odd one out?
Checks comparing of fraction, decimal and percentage equivalents

a) 0.4 ***0.4 is equivalent to $\frac{2}{5}$ and 40%***

b) $\frac{2}{5}$ ***$\frac{2}{5}$ is equivalent to 0.4 and 40%***

c)
$\frac{40}{10}$ **Correct answer – this is equal to 4**

d)
40% ***40% is equivalent to $\frac{2}{5}$ and 0.4***

20. Order these numbers in ascending order (from smallest to biggest): $\frac{4}{3}$ 60% 0.192
Checks comparing and ordering fractions, decimals and percentage equivalents

a) 0.192, $\frac{4}{3}$, 60%
Pupil may realise 0.192 is the smallest number, but has not recognised that $\frac{4}{3}$ is greater than 1, so therefore bigger than 60%

b) $\frac{4}{3}$, 60%, 0.192
Pupil has listed the number in descending order

c) 0.192, 60%, $\frac{4}{3}$
Correct answer

d) 60%, $\frac{4}{3}$, 0.192
Possible misconception – pupil lacks understanding of decimals, and believing that more digits after the decimal means a bigger number

21. Find 5% of 1kg (There are two possible correct answers to this one)
Checks finding a percentage in context. Pupils could convert between kg and g

a) 0.5kg
Pupil has found 50% of 1kg

b) 50g
Correct answer – if pupil has converted to g

c) 5g
Possible misconception – 1kg = 100g

d) 0.05kg
Correct answer – if pupil has not converted to g

22. $\frac{14}{21} \div 7$ *Checks dividing a fraction by a whole number*

a) 5 ***Misconception – adding numerator and denominator together and then dividing by 7***

b) $\frac{5}{21}$ ***Misconception – adding denominator and numerator before dividing by 7 and then putting the denominator back on the bottom***

c) $\frac{2}{21}$ **Correct answer**

d) $\frac{2}{3}$ ***Dividing both the numerator and denominator by 7***

23. $\frac{3}{5} \times \frac{2}{3} =$ *Checks multiplying two fractions together*

a) $\frac{9}{10}$ ***Misconception – pupil is multiplying diagonally across both fractions***

b) $\frac{10}{9}$ ***Misconception – pupil is multiplying diagonally across both fractions***

c) $\frac{6}{8}$ ***Misconception – pupil multiplies numerator and adds denominators and lacks understanding of why the denominators should also be multiplied***

d) $\frac{6}{15}$ **Correct answer**

24. 3.74 x 8
Checks multiplying a decimal number (to 2 d.p) with a whole number

a) 2992
Misconception – has multiplied digits correctly but without taking into account the decimal point

b) 29.92
Correct answer

c) 299.2
Misconception – has multiplied digits correctly but inserted the decimal point incorrectly

d) 2.992
Misconception – has multiplied digits correctly but inserted the decimal point incorrectly

25. Write $\frac{3}{8}$ as a decimal number (decimal fraction) *Checks finding decimal fraction equivalents*

a) 0.38
Misconception – pupil takes both digits and places it after the decimal point

b) 3.8
Misconception – pupil takes both digits and inserts a decimal point

c) 2.66
Some understanding of the use of division, but has divided 8 by 3

d) 0.375
Correct answer

Next steps

If you like this resource, we have more free primary Maths resources available on our website.
Just sign up at **www.thirdspacelearning.com/blog**.

If any of your pupils would benefit from some specific personalised attention in Maths, our tutors can help.

We are Maths specialists who have delivered more than 90,000 1-to-1 lessons to pupils in England and Wales. All the lessons are focused on an individual pupil's learning gaps. The interventions are delivered online with a real tutor for the pupil to talk to. This helps schools to raise pupils' attainment, accelerate their progress and build their confidence in Maths.

"Our Third Space pupils made great progress and absolutely smashed their Maths SATS!"
Alex Knight, Edwalton Primary School 2016

"With Third Space, our pupils improved by 2-3 sub-levels in only one term. One of the major benefits of 1-to-1 tuition is the individual interaction and feedback each pupil receives from their tutor. This really boosted their confidence and has been reflected in their class work."
Kevin Imbush, Somers Heath Primary School 2014

Get in touch

We'd love to talk to you about how we could support your pupils. Just give us a call on 020 3771 0095 or visit **www.thirdspacelearning.com** and book a demo.