Planner

Multiplying and dividing fractions

- Multiplying fractions by fractions
- Dividing fractions by fractions using the inverse
- Finding fractions of quantities

Keywords

You should know

explanation 1a | explanation 1b | online

1 Work these out.

a $\frac{2}{3} \times \frac{4}{5}$ **b** $\frac{2}{7} \times \frac{3}{8}$ **c** $\frac{12}{25} \times \frac{10}{11}$ **d** $\frac{9}{15} \times \frac{5}{6}$

e $\frac{8}{11} \times \frac{33}{40}$ **f** $\frac{9}{10} \times \frac{15}{36}$ **g** $\frac{32}{45} \times \frac{18}{25}$ **h** $\frac{6}{7} \times \frac{21}{30} \times \frac{2}{3}$

2 Kevin think that three eighths of one fifth is the same as three fifths of one eighth. Is he correct?

3 Three quarters of Sarah's friends have brown hair.

Two fifths of those with brown hair also have blue eyes.

a What fraction of Sarah's friends have brown hair and blue eyes?

b What is the smallest number of friends that Sarah could have?

4 Find three different pairs of fractions that multiply to give $\frac{5}{12}$.

5 Work these out.

a $1\frac{3}{4} \times \frac{5}{8}$ **b** $2\frac{2}{3} \times 1\frac{1}{5}$ **c** $2\frac{3}{5} \times 2\frac{1}{3}$ **d** $3\frac{1}{3} \times 1\frac{3}{7}$

e $4\frac{1}{6} \times 3\frac{4}{5}$ **f** $5 \times 6\frac{7}{8}$ **g** $5\frac{11}{12} \times 24$ **h** $2\frac{5}{6} \times 4\frac{2}{7}$

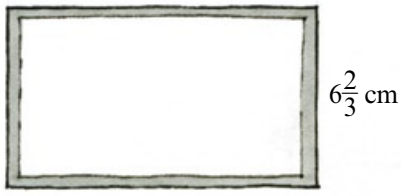
i $5\frac{3}{8} \times 3\frac{1}{5}$ **j** $3\frac{7}{10} \times 3\frac{2}{6}$ **k** $1\frac{1}{4} \times 2\frac{1}{3} \times 3\frac{1}{2}$ **l** $2\frac{1}{5} \times 3\frac{3}{4} \times 1\frac{3}{22}$

6 Work these out. Remember to use BIDMAS.

a $\left(1\frac{3}{7}\right)^2$ **b** $\left(1\frac{3}{4}\right)^3$ **c** $\frac{1}{4}\left(2 - \frac{1}{3}\right)$ **d** $\frac{2}{3}\left(\frac{2}{3} + 1\frac{1}{6}\right)$

7 Calculate the areas of these photo frames.

a



b

8 Jenny walks at $4\frac{1}{3}$ km/h and Kim jogs at $7\frac{1}{5}$ km/h.

They leave at the same time from the same place and go for a walk or jog.

a How far apart will they be after $\frac{3}{4}$ hour if they both travelled in the same direction?

b How far apart will they be after $\frac{3}{4}$ hour if they travelled in opposite directions?

explanation 2a | explanation 2b | explanation 2c | online

9 Work these out.

a $18 \div \frac{1}{3}$ **b** $\frac{3}{4} \div 8$ **c** $72 \div \frac{5}{6}$ **d** $\frac{7}{12} \div 21$

e $\frac{7}{15} \div \frac{5}{6}$ **f** $\frac{9}{25} \div \frac{15}{21}$ **g** $\frac{9}{22} \div \frac{4}{11}$ **h** $\frac{7}{8} \div \frac{6}{7}$

i $\frac{14}{15} \div \frac{21}{40}$ **j** $\frac{25}{32} \div \frac{5}{48}$ **k** $\frac{56}{81} \div \frac{14}{54}$ **l** $\frac{85}{132} \div \frac{25}{48}$

10 A ferry completes a crossing of an inlet in $\frac{2}{3}$ hour.

What is the largest number of crossings the ferry could make in 15 hours?

11 Indira had $\frac{17}{20}$ kg of apples.

She divided the apples into bags weighing $\frac{3}{10}$ kg.

How many bags of apples did she get?

12 Find three different pairs of fractions that give the answer $\frac{3}{5}$ when one is divided by the other.

13 Work these out.

a $2\frac{1}{2} \div \frac{3}{4}$ **b** $2\frac{2}{3} \div \frac{4}{5}$ **c** $5\frac{5}{12} \div \frac{10}{21}$ **d** $1\frac{7}{8} \div 1\frac{1}{4}$

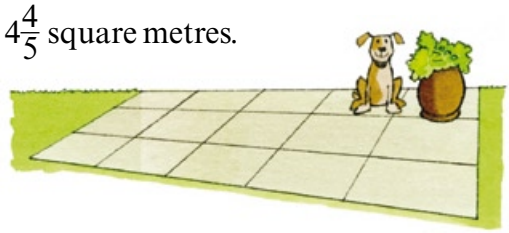
e $6\frac{4}{9} \div 2\frac{2}{3}$ **f** $3\frac{1}{7} \div 1\frac{2}{9}$ **g** $2\frac{1}{2} \div 4\frac{3}{5}$ **h** $3\frac{4}{5} \div 3\frac{1}{3}$

i $7\frac{3}{5} \div 1\frac{2}{10}$ **j** $5\frac{7}{8} \div 1\frac{1}{4}$ **k** $6\frac{5}{12} \div 1\frac{1}{10}$ **l** $3\frac{4}{7} \div 3\frac{3}{14}$

14 The area of a rectangular paved patio is $4\frac{4}{5}$ square metres.

It is $2\frac{2}{3}$ metres long.

How wide is the patio?



15 It takes $2\frac{3}{4}$ metres of fabric to make a dress.

How many dresses can be made from $12\frac{7}{8}$ metres of fabric?

16 Work these out.

a $\frac{3}{4} \times \frac{7}{10} \div \frac{1}{5}$ **b** $\frac{6}{15} \div \frac{3}{10} \times \frac{12}{25}$ **c** $1\frac{3}{4} \times 2\frac{1}{2} \div \frac{5}{6}$ **d** $1\frac{2}{3} \times \frac{9}{10} \div 2\frac{1}{6}$

17 Which is larger, $\frac{4}{7} \times 1\frac{1}{6}$ or $3\frac{3}{4} \div 4\frac{3}{8}$?

18 A photocopier can enlarge printed material by a factor of $1\frac{9}{20}$.

A picture measuring $12\frac{1}{2}$ inches by $10\frac{4}{5}$ inches is enlarged.

What is the length of each side of the enlarged picture?

19 What is the largest and smallest answer that you can make using two of the numbers from the box?

You can either multiply or divide the numbers.

$\frac{3}{5}$		$1\frac{3}{4}$
	$\frac{1}{10}$	$3\frac{5}{6}$
$\frac{1}{8}$		$2\frac{2}{3}$

explanation 3a explanation 3b online

20 Find these amounts.

a $\frac{4}{5}$ of 35 **b** $\frac{3}{8}$ of 64 **c** $\frac{7}{11}$ of 110 **d** $\frac{3}{5}$ of 750

e $\frac{11}{15}$ of 45 **f** $\frac{9}{20}$ of 8000 **g** $\frac{11}{25}$ of 150 m **h** $\frac{14}{60}$ of 1200 g

i $\frac{19}{40}$ of £280 **j** $\frac{35}{36}$ of 144 ml **k** $\frac{39}{44}$ of 220 litres **l** $\frac{23}{27}$ of £108

21 Suriya earned £360 last week. She saves $\frac{2}{9}$ of her salary every week.

How much did she save last week?

22 A day on Jupiter is about $\frac{3}{8}$ of a day on Earth.

Approximately how many hours are there in a Jupiter day?

23 This recipe for lemon pepper chicken serves 24 people.

Lemon Pepper Chicken

3 kg chicken	1.2 kg chopped onion
1.68 kg green pepper	12 lemons
144 g butter	240 g flour
3.6 litres chicken stock	6 handfuls of fresh herbs

1 kg = 1000 g
1 litre = 1000 ml

a How much of each ingredient will you need for 16 people?

b How much of each ingredient will you need for 5 people?

24 A school had 1080 pupils.

$\frac{5}{12}$ were European and $\frac{2}{9}$ were of African descent.

How many pupils were neither European nor of African descent?

25 A test took 180 minutes.

Joe took $\frac{1}{6}$ of the time to answer the multiple-choice section,

$\frac{1}{4}$ for the problem-solving section, $\frac{3}{8}$ for the essay and

the rest for the short answers.

How long did Joe spend on each section?

26 Millie worked a total of 35 hours last week. She did not work on Tuesday.

One quarter of her hours were worked on Monday, $\frac{1}{6}$ on Wednesday and $\frac{5}{12}$ at the weekend.

How many hours and minutes in total did Millie work on the other days of the week?

27 Bob cut $\frac{1}{8}$ off the end of a 50 m length of rope.

a How long was this piece of rope in metres?

b How long was the piece of rope in centimetres?

28 Three friends all left London at the same time.

	Liverpool	Norwich	Portsmouth
London to	280 km	160 km	100 km

After one hour,

Jimmy had travelled $\frac{3}{8}$ of the way to Norwich,

Carla had travelled $\frac{2}{7}$ of the way to Liverpool,

Lewis travelled $\frac{3}{5}$ of the way to Portsmouth.

Who had travelled the furthest?