Worksheet - Fractions

Year: Year 7 · 22

Show your working.

Question 1

Question 1 – Fraction walls and equivalent fractions *(Section A · Skills practice)*

Priya is colouring a fraction wall for her maths classroom display. Each bar is the same length but is split into a different number of equal parts. She needs to find fractions that match.

a. Fill in the missing number: $\frac{2}{3} = \frac{?}{12}$

b. Fill in the missing number: $\frac{5}{8} = \frac{20}{?}$

c. Fill in the missing number: $\frac{36}{48} = \frac{?}{4}$

d. Write down two more fractions that are equivalent to $\frac{3}{5}$. Explain how you found them.

Question 2

Question 2 – Simplifying fractions *(Section A · Skills practice)*

Simplify each fraction fully. Write down the highest common factor (HCF) you divide by.

a. $\frac{18}{24}$

b. $\frac{45}{60}$

c. $\frac{84}{126}$

d. $\frac{150}{200}$

Which of the four fractions are equal to $\frac{3}{4}$?

Question 3

Question 3 – Mixed numbers and improper fractions *(Section A · Skills practice)*

Baking recipes often use mixed numbers, but a calculator needs improper fractions.

a. Write $\frac{17}{5}$ as a mixed number.

b. Write $\frac{29}{8}$ as a mixed number.

c. Write $3\frac{3}{4}$ as an improper fraction.

d. Write $5\frac{2}{9}$ as an improper fraction.

e. Which is larger, $\frac{23}{6}$ or $3\frac{5}{6}$? Explain.

Question 4

Question 4 – Putting fractions in order *(Section A · Skills practice)*

A teacher asks four pupils how much of a pizza they ate.

a. Put $\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{8}$, $\frac{7}{12}$ in order, smallest first.

b. Put $\frac{7}{10}$, $\frac{3}{4}$, $\frac{13}{20}$, $\frac{4}{5}$ in order, largest first.

c. Write a fraction that lies between $\frac{1}{2}$ and $\frac{2}{3}$.

Question 5

Question 5 – Adding and subtracting fractions *(Section A · Skills practice)*

Work these out. Give each answer in its simplest form, as a mixed number where needed.

a. $\frac{2}{5} + \frac{1}{5}$

b. $\frac{1}{3} + \frac{1}{4}$

c. $\frac{5}{6} - \frac{1}{4}$

d. $\frac{2}{3} + \frac{3}{5}$

e. $2\frac{1}{2} + 1\frac{3}{4}$

f. $3\frac{1}{5} - 1\frac{7}{10}$

Question 6

Question 6 – Fractions of amounts *(Section A · Skills practice)*

Work these out without a calculator. Show the division and the multiplication.

a. $\frac{2}{3}$ of 36
b. $\frac{3}{5}$ of 45
c. $\frac{7}{8}$ of 64 kg
d. $\frac{5}{12}$ of £84

Question 7

Question 7 – Pizza night *(Section B · Real-life practice)*

The Patel family order two large pizzas for a birthday party. Pizza A is cut into 8 equal slices and pizza B is cut into 12 equal slices. By the end of the evening the family has eaten $\frac{5}{8}$ of pizza A and $\frac{7}{12}$ of pizza B.

a. Which pizza has had the larger fraction eaten? Show your working with a common denominator.
b. What fraction of pizza A is left?
c. How many slices are left in total from the two pizzas?
d. Dev says, "Together we have eaten $\frac{12}{20}$ of a pizza." Explain why Dev is wrong and work out the correct total, as a mixed number.

Question 8

Question 8 – Cake sale at school *(Section B · Real-life practice)*

Year 7 hold a cake sale to raise money for a local animal shelter. They bake 48 cupcakes. In the morning they sell $\frac{1}{4}$ of the cupcakes. At lunchtime they sell $\frac{1}{3}$ of the cupcakes. Each cupcake costs 75p.

a. How many cupcakes are sold in the morning?
b. How many are sold at lunchtime?
c. What fraction of the cupcakes is left at the end of lunchtime?
d. How much money has been raised so far?
e. The teacher says the class will raise more than £30 if they sell $\frac{5}{6}$ of all the cupcakes. Is she right?

Question 9

Question 9 – The school trip budget *(Section B · Real-life practice)*

Class 7B are going on a trip to the Science Museum in London. The trip costs £360 in

total. The school pays $\frac{2}{5}$ of the cost, the parents' association pays $\frac{1}{4}$ of the cost, and the pupils pay the rest.

a. How much does the school pay?
b. How much does the parents' association pay?
c. What fraction of the cost do the pupils pay?
d. There are 24 pupils in the class. How much does each pupil pay?

Question 10

Question 10 – Mixing paint in art club *(Section B · Real-life practice)*

In art club, Mia mixes a shade of green paint. She uses $2\frac{1}{2}$ litres of blue paint and $1\frac{3}{4}$ litres of yellow paint. Later she makes a second pot that needs $3\frac{1}{5}$ litres of paint but she only has $1\frac{7}{10}$ litres of white left to use as a base.

a. How much green paint does Mia make in the first pot?
b. How much more white paint does she need for the second pot?
c. Mia pours the first pot equally into 5 smaller jars. How much paint is in each jar, as a fraction of a litre?

Question 11

Question 11 – Running club *(Section B · Real-life practice)*

Zara is training for the school cross-country race. Her route is $5\frac{1}{2}$ km long. On Monday she runs $\frac{3}{4}$ of the route. On Wednesday she runs the whole route twice. On Friday she runs $\frac{2}{3}$ of the route.

a. How far does she run on Monday? Give your answer as a mixed number.
b. How far does she run in total over the three days?
c. The coach wants her to run at least 20 km in the week. How much further must she run?

Question 12

Question 12 – Garden planting *(Section B · Real-life practice)*

Mr Evans is planning his allotment, which has an area of 60 square metres. He plants potatoes on $\frac{2}{5}$ of the allotment, carrots on $\frac{1}{4}$ of it, and the rest is grass and a path. He then divides the carrot area into 3 equal rows.

a. What area is used for potatoes?
b. What fraction of the allotment is grass and path?
c. What area does each row of carrots cover?
d. Mr Evans wants to use $\frac{3}{4}$ of the potato area for new potatoes. How many square metres is that?

Question 13

Question 13 – Filling the water butt *(Section B · Real-life practice)*

A school has a water butt in the garden that holds 240 litres when full. After a week of rain it is $\frac{3}{8}$ full. The caretaker then adds water from a hose until it is $\frac{7}{8}$ full. During the next week the plants use $\frac{1}{4}$ of the water in the butt.

a. How many litres are in the butt after the rain?
b. What fraction of the butt did the caretaker add?
c. How many litres are in the butt after he has finished?
d. How many litres are left after the plants have used $\frac{1}{4}$ of the water?

Question 14

Question 14 – Dividing a ribbon *(Section B · Real-life practice)*

Hannah has a ribbon that is $\frac{9}{10}$ of a metre long. She wants to cut it into pieces to tie round birthday presents. Each piece must be $\frac{3}{20}$ of a metre long.

a. How many pieces can she cut? Show the division of fractions.
b. Hannah then buys another ribbon that is $1\frac{1}{2}$ m long. How many pieces of length $\frac{3}{20}$ m can she cut from this one?
c. What is the total length of ribbon she now has?

Question 15

Question 15 – Planning the school disco *(Section C · Problem solving)*

The Year 7 council is organising a disco in the school hall. They have a budget of £240.

Item	Fraction of the budget
Music and lights	$\frac{1}{3}$

Item	Fraction of the budget
Food and drink	$\frac{3}{8}$
Decorations	$\frac{1}{12}$
Prizes	the rest

a. What fraction of the budget is left for prizes?
b. How much money is spent on each item?
c. The council wants to spend at least £30 on prizes. Is there enough money? Show how you know.
d. Tickets cost £2.50 each. How many tickets must they sell to cover the whole £240 budget?

Question 16

Question 16 – Fun run training *(Section C · Problem solving)*

Jamal is training for a 10 km fun run. He writes a table of how far he runs each week as a fraction of the 10 km.

Week	1	2	3	4
Fraction of 10 km	$\frac{1}{4}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{9}{10}$

a. Convert each week's fraction into kilometres.
b. What is the total distance he runs in weeks 1 and 2, as a fraction of 10 km?
c. Is there a week in which he runs exactly 0.5 km more than twice what he ran in week 1? Explain.
d. Jamal says, "In week 4 I ran more than three times the distance of week 1." Is he correct?
e. How many kilometres does he still need to add in week 5 to reach a total of 10 km in a single week?

Question 17

Question 17 – The sweet shop *(Section C · Problem solving)*

A sweet shop sells pick and mix by weight. Today the shop has 4 kg of gummy bears. By midday $\frac{3}{8}$ of the gummy bears have been sold. In the afternoon $\frac{2}{5}$ of what is left is sold. The gummy bears cost £1.20 per 100 g.

a. How many kilograms are sold by midday?
b. How much is left at midday?
c. How many kilograms are sold in the afternoon?
d. How much money does the shop take from the gummy bears all day?

e. What fraction of the original 4 kg is left at closing time?

Question 18

Question 18 – Travelling to school *(Section C · Problem solving)*

A pupil makes a survey about how the 120 pupils in Year 7 travel to school.

Method	Fraction of pupils
Walk	$\frac{3}{8}$
Bus	$\frac{1}{4}$
Car	$\frac{1}{6}$
Cycle	$\frac{1}{12}$
Train	the rest

a. What fraction of the pupils travel by train?
b. How many pupils travel by each method?
c. What fraction of the pupils do not walk? Give your answer in its simplest form.
d. The headteacher says more than half of the pupils use a car or a bus. Is she correct? Show your working.

Question 19

Question 19 – A recipe for scones *(Section C · Problem solving)*

This recipe makes 12 scones.

Ingredient	Amount for 12 scones
Flour	$1\frac{1}{2}$ cups
Butter	$\frac{3}{4}$ cup
Sugar	$\frac{1}{3}$ cup
Milk	$\frac{2}{3}$ cup

a. How much of each ingredient is needed for 36 scones?
b. How much of each ingredient is needed for 6 scones?
c. Hana has only 2 cups of flour. What is the largest number of scones she can make if she follows the recipe exactly?

d. Hana has $\frac{1}{2}$ cup of milk. Is that enough for 12 scones? How much more or less does she have than needed?

Question 20

Question 20 – Spot the mistake *(Section C · Problem solving)*

Three pupils each made one mistake while working with fractions. Find each mistake, explain it, and write the correct answer.

a. Ali writes: $\frac{1}{2} + \frac{1}{3} = \frac{2}{5}$
b. Beth writes: $\frac{3}{4} \div \frac{1}{2} = \frac{3}{8}$
c. Carl writes: $1\frac{1}{2} \times 2\frac{1}{3} = 2\frac{1}{6}$
d. Whose mistake could be spotted just by checking that the answer is sensible? Explain.

Question 21

Question 21 – Pocket money plan *(Section C · Problem solving)*

Sam receives £20 each month. He saves $\frac{2}{5}$ of it, spends $\frac{1}{4}$ on snacks, and spends $\frac{1}{5}$ of the remainder after savings and snacks on a magazine. The rest he spends on bus fares.

a. How much does Sam save?
b. How much does he spend on snacks?
c. How much money is left after saving and snacks?
d. How much does he spend on the magazine?
e. What fraction of his £20 does he spend on bus fares? Give your answer in its simplest form.

Question 22

Question 22 – Challenge: the leaking tank *(Section D · Challenge)*

A tank is $\frac{3}{5}$ full and contains 45 litres of water. A tap fills it at a rate of 2.5 litres per minute while a leak loses water at a rate of $\frac{1}{2}$ litre per minute.

a. How many litres does the tank hold when it is full?
b. What is the net increase in the amount of water per minute?
c. How long will it take to fill the tank completely?

d. If the leak were $\frac{3}{4}$ of a litre per minute, how many minutes longer would it take?