Worksheet - Fractions: add, subtract, multiply and divide

Year: Year 6 · 20

Show your working.

Question 1

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

Hana is checking her fractions homework. Help her with the following.

a. Simplify $\frac{18}{24}$, $\frac{40}{100}$, $\frac{36}{48}$ and $\frac{45}{60}$.
b. Fill in the missing numbers: $\frac{2}{3} = \frac{?}{12}$, $\frac{3}{5} = \frac{18}{?}$ and $\frac{7}{8} = \frac{?}{40}$.
c. Which is bigger, $\frac{5}{8}$ or $\frac{2}{3}$? By how much?

Question 2

Question 2 – Adding and subtracting fractions *(Section A · Skills practice)*

Work out each answer. Give every answer in its simplest form, and as a mixed number if it is bigger than 1.

a. $\frac{1}{4} + \frac{2}{3}$
b. $\frac{5}{6} - \frac{1}{4}$
c. $\frac{3}{5} + \frac{7}{10}$
d. $\frac{7}{8} - \frac{3}{4}$
e. $\frac{2}{9} + \frac{1}{6}$

Question 3

Question 3 – Adding mixed numbers *(Section A · Skills practice)*

Add these mixed numbers. Show the wholes and the fractions separately.

a. $2\frac{1}{2} + 1\frac{3}{4}$
b. $3\frac{2}{5} + 1\frac{7}{10}$
c. $1\frac{2}{3} + 2\frac{3}{4}$
d. $4\frac{5}{6} + 2\frac{1}{3}$

Question 4

Question 4 – Subtracting mixed numbers *(Section A · Skills practice)*

Subtract these. When the fraction of the first number is too small, exchange one whole

for fractions.

a. $3\frac{1}{3} - 1\frac{5}{6}$
b. $4\frac{1}{5} - 1\frac{7}{10}$
c. $5 - 2\frac{3}{8}$
d. $6\frac{1}{4} - 2\frac{1}{2}$

Question 5

Question 5 – Multiplying fractions *(Section A · Skills practice)*

Multiply the fractions and simplify. You can cancel common factors before multiplying to keep the numbers small.

a. $\frac{1}{2} \times \frac{1}{3}$
b. $\frac{2}{3} \times \frac{3}{4}$
c. $\frac{3}{8} \times \frac{4}{9}$
d. Find $\frac{3}{4}$ of 20.
e. Find $\frac{5}{6}$ of 48.

Question 6

Question 6 – Dividing a fraction by a whole number *(Section A · Skills practice)*

Divide each fraction. Remember that dividing by a whole number makes the denominator bigger.

a. $\frac{1}{2} \div 3$
b. $\frac{3}{4} \div 2$
c. $\frac{4}{5} \div 4$
d. $\frac{2}{3} \div 5$
e. $\frac{6}{7} \div 3$

Question 7

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

Sam, Mia and Dad share a large pizza that has been cut into 12 equal slices. Sam eats $\frac{1}{4}$ of the pizza and Mia eats $\frac{1}{3}$ of the pizza. Dad eats $\frac{1}{6}$ of the pizza.

a. How many slices does each person eat?
b. What fraction of the pizza do Sam and Mia eat together?
c. What fraction of the pizza is left after Dad has eaten too? Give the answer in simplest form.
d. Mum shares what is left equally between herself and her sister. What fraction of the whole pizza does each of them get?

Question 8

Question 8 – Sharing the juice *(Section B · Real-life practice)*

Tom pours orange juice for a party. He has $\frac{3}{4}$ of a litre in one jug and $\frac{2}{3}$ of a litre in another jug.

a. He shares the first jug equally between 6 glasses. What fraction of a litre is in each glass? How many millilitres is that?
b. He shares the second jug equally between 4 glasses. What fraction of a litre is in each glass?
c. How much juice does Tom have altogether? Give the answer as a mixed number of litres.
d. He needs 2 litres in total. How much more juice does he need?

Question 9

Question 9 – Walking to school *(Section B · Real-life practice)*

There are 40 children in Class 6B. $\frac{3}{5}$ of them walk to school. Of the children who walk, $\frac{1}{4}$ live on Oak Road.

a. How many children walk to school?
b. What fraction of the walkers live on Oak Road, and how many children is that?
c. What fraction of the whole class live on Oak Road and walk to school?
d. $\frac{1}{8}$ of the class come by bus. How many children is that, and what fraction of the class travel in another way (for example by car or bike)?

Question 10

Question 10 – Baking bread *(Section B · Real-life practice)*

Cara bakes bread. One loaf needs $\frac{3}{4}$ kg of flour. She wants to make $2\frac{1}{2}$ times the recipe.

a. How much flour does she need for $2\frac{1}{2}$ times the recipe? Give the answer as a mixed number.
b. She has a 2 kg bag of flour. How much will be left over?
c. Cara uses $\frac{1}{3}$ of the flour she needs for a different recipe: pastry. How much flour is this?

Question 11

Question 11 – The school garden *(Section B · Real-life practice)*

The school garden is a rectangle with an area of 120 m². $\frac{1}{2}$ of the garden grows vegetables, $\frac{1}{3}$ is for flowers and the rest is a lawn.

a. What fraction of the garden is lawn?
b. What is the area of each part in square metres?
c. The pupils plant potatoes in $\frac{3}{4}$ of the vegetable area. What area is this?
d. Next year, the pupils turn $\frac{1}{4}$ of the lawn into a pond. What fraction of the whole garden is the pond?

Question 12

Question 12 – Training for the run *(Section B · Real-life practice)*

Jamal is training for a charity run of 10 km. On Monday he runs $2\frac{3}{4}$ km. On Tuesday he runs $1\frac{5}{8}$ km. On Thursday he runs $3\frac{1}{2}$ km.

a. How far did he run on Monday and Tuesday together?
b. How far has he run in total after Thursday?
c. How much further does he need to run to reach 10 km?
d. On race day, he runs the first $\frac{2}{5}$ of the 10 km quickly. How many kilometres is that?

Question 13

Question 13 – Pocket money *(Section B · Real-life practice)*

Ella has £45 pocket money saved in her money jar. She spends $\frac{2}{5}$ of it on a book and $\frac{1}{3}$ of it on a cinema ticket.

a. How much does the book cost?
b. How much does the cinema ticket cost?
c. What fraction of her money has she spent altogether?
d. How much money is left? What fraction of the £45 is left?

Question 14

Question 14 – Ribbon for the bows *(Section B · Real-life practice)*

A florist has a ribbon that is $3\frac{1}{2}$ m long. She uses $\frac{3}{4}$ m of ribbon for each bow.

a. How much ribbon does she use for 3 bows?
b. How much ribbon is left?
c. She cuts the ribbon that is left into 5 equal pieces. How long is each piece?
d. Is it possible to make one more bow from one of those pieces? Explain.

Question 15

Question 15 – Sports day *(Section C · Problem solving)*

There are 120 children in Years 5 and 6 at the sports day. Each child takes part in one

event. The table shows the fraction of the children in each event.

Event	Fraction of the children
Sprint	$\frac{1}{4}$
Relay	$\frac{1}{3}$
Long jump	$\frac{1}{6}$
Hurdles	the rest

a. How many children take part in each of the sprint, the relay and the long jump?
b. What fraction of the children take part in the hurdles?
c. How many children are in the hurdles?
d. Of the children in the relay, $\frac{3}{5}$ are in Year 6. How many Year 6 children are in the relay?
e. Half the sprinters are girls. $\frac{2}{5}$ of the long jumpers are girls. How many girls are in these two events altogether?
f. The teacher says "more than half the children are in the sprint and relay". Is she right? Show your working.

Question 16

Question 16 – Reading the novel *(Section C · Problem solving)*

Aisha is reading a novel with 240 pages. She reads $\frac{3}{8}$ of the book on Saturday and $\frac{1}{4}$ of the book on Sunday. On Monday she reads $\frac{1}{3}$ of the pages that are left. The rest is for the school holiday.

a. How many pages does she read on Saturday and how many on Sunday?
b. What fraction of the book has she read by the end of Sunday?
c. What fraction of the book is left on Sunday evening, and how many pages is that?
d. How many pages does she read on Monday, and what fraction of the whole book is that?
e. How many pages are left for the holiday? Write that as a fraction of the book in simplest form.

Question 17

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

A farm shop has $5\frac{1}{2}$ litres of cream and $3\frac{3}{4}$ litres of milk to put into small bottles. A customer buys $\frac{3}{4}$ of the cream and $1\frac{1}{2}$ litres of the milk.

a. How many litres of cream does the customer buy?
b. How many litres of cream are left?
c. How many litres of milk are left?
d. How many litres of cream and milk are left in total?
e. The farmer pours the milk that is left into small bottles that each hold $\frac{1}{4}$ litre.

How many bottles can she fill?

Question 18

Question 18 – Who is right about fractions? *(Section C · Problem solving)*

Four pupils did these calculations.

a. Ali says $\frac{1}{3} + \frac{1}{4} = \frac{2}{7}$. Is he right? Explain, and give the correct answer.
b. Bea says $\frac{3}{4} \times \frac{2}{5} = \frac{6}{20} = \frac{3}{10}$. Is she right? Explain.
c. Chen says $\frac{2}{3} \div 4 = \frac{8}{3}$. Is he right? Show his mistake and give the right answer.
d. Dee says $3\frac{1}{4} - 1\frac{1}{2} = 2\frac{1}{4}$ because 3 − 1 = 2 and $\frac{1}{2} - \frac{1}{4} = \frac{1}{4}$. What did she do wrong? Find the correct answer.

Question 19

Question 19 – Filling the water tank *(Section C · Problem solving)*

A rainwater tank holds 240 litres when it is full. At the start of a dry week, it is $\frac{5}{8}$ full. During the week, $\frac{2}{5}$ of the water in the tank is used to water the garden. Then it rains and the tank gains $\frac{1}{6}$ of its full capacity.

a. How many litres are in the tank at the start of the week?
b. How many litres are used on the garden?
c. How many litres are in the tank after the watering?
d. How many litres does the rain add?
e. What fraction of the tank is full at the end? Is the tank more or less than half full?

Question 20

Question 20 – Challenge: missing fractions *(Section D · Challenge)*

Two fractions add up to $1\frac{1}{12}$. One of them is $\frac{1}{4}$.

a. Find the other fraction.
b. The other fraction is multiplied by $\frac{3}{5}$. What is the product?
c. Three different unit fractions (fractions with a numerator of 1) add up to 1. Two of them are $\frac{1}{2}$ and $\frac{1}{3}$. Find the third one.