Worksheet - Adding, subtracting and multiplying fractions

Year: Year 5 · 20

Show your working.

Question 1

Question 1 – Same denominator *(Section A · Practice)*

Work out each sum. Write the answer in its simplest form, as a mixed number if it is bigger than 1.

a. $\frac{3}{8} + \frac{2}{8}$
b. $\frac{7}{10} - \frac{3}{10}$
c. $\frac{5}{6} + \frac{4}{6}$
d. $\frac{11}{12} - \frac{5}{12}$

Question 2

Question 2 – Different denominators *(Section A · Practice)*

Change one fraction so the denominators match, then work out the answer.

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

Question 3

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

Work out each sum.

a. $1\frac{1}{4} + 2\frac{1}{4}$
b. $2\frac{3}{5} + 1\frac{4}{5}$
c. $3\frac{1}{2} + 2\frac{1}{4}$

Question 4

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

Work out each answer. Check by adding.

a. $4\frac{3}{4} - 1\frac{1}{4}$
b. $5\frac{1}{2} - 2\frac{3}{4}$
c. $3 - 1\frac{2}{5}$

Question 5

Question 5 – Fractions times whole numbers *(Section A · Practice)*

Work out each answer. Write it as a mixed number in simplest form.

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

Question 6

Question 6 – Mixed numbers times whole numbers *(Section A · Practice)*

Work out each answer.

a. $3 \times 1\frac{1}{2}$
b. $4 \times 2\frac{1}{4}$
c. $2 \times 3\frac{2}{5}$

Question 7

Question 7 – Leftover pizza *(Section B · Real-life practice)*

After a party there are two boxes with leftover pizza. Box A has $\frac{3}{8}$ of a pizza and box B has $\frac{5}{8}$ of a pizza. Dad eats $\frac{1}{4}$ of a pizza for lunch the next day.

a. How much pizza is there in the two boxes altogether?
b. Write $\frac{1}{4}$ with denominator 8.
c. How much pizza is left after Dad has eaten his $\frac{1}{4}$?
d. Dad eats the same amount the next day. How much is left then?

Question 8

Question 8 – The garden path *(Section B · Real-life practice)*

Sam is laying a garden path in three sections. The first is $1\frac{3}{4}$ m long, the second is $2\frac{1}{2}$ m long and the third is $\frac{5}{8}$ m long.

a. Write the lengths of all three sections as eighths.
b. Find the total length of the path.
c. The shed is $6\frac{1}{4}$ m from the house. How much longer is the shed distance than the

path?
d. Sam needs 8 more sections like the third one. How long are they all together?

Question 9

Question 9 – Baking in bulk *(Section B · Real-life practice)*

A recipe for 1 batch of flapjacks uses $\frac{3}{4}$ cup of oats, $\frac{2}{3}$ cup of syrup and $1\frac{1}{2}$ cups of raisins. The baker wants to make 4 batches.

Ingredient	1 batch (cups)	4 batches (cups)
Oats	$\frac{3}{4}$	?
Syrup	$\frac{2}{3}$	?
Raisins	$1\frac{1}{2}$	?

a. Complete the table.
b. How many cups of oats and syrup are needed together?
c. The baker has only 5 cups of raisins. Is that enough?

Question 10

Question 10 – Training run *(Section B · Real-life practice)*

Hana trains for a race. On Monday she runs $2\frac{1}{2}$ km, on Tuesday $1\frac{3}{4}$ km and on Wednesday $3\frac{1}{4}$ km.

a. How far does she run in the three days? Show how to add the whole numbers and the fractions.
b. On Thursday she runs 2 km less than the Monday to Wednesday total. How far is that?
c. Her goal is 10 km in the week. How much further must she run?
d. On Friday she runs 3 laps of a track that is $\frac{2}{5}$ km long. How far is that?

Question 11

Question 11 – Painting the fence *(Section B · Real-life practice)*

Mr Green is painting the school fence. He starts with $4\frac{1}{2}$ litres of paint. He uses $1\frac{3}{4}$ litres on Monday and $2\frac{1}{4}$ litres on Tuesday.

a. How much paint does he use in the two days?
b. How much paint is left?
c. On Wednesday he needs $1\frac{1}{2}$ litres. Does he have enough?
d. He buys 3 tins of paint, each holding $\frac{3}{4}$ litre. How much paint is this altogether?

Question 12

Question 12 – Water for the school trip *(Section B · Real-life practice)*

On a school trip each child drinks $\frac{2}{3}$ litre of water during the morning. There are 7 children in one group.

a. How much water does the group drink in the morning? Give the answer as a mixed number.
b. In the afternoon each child drinks $\frac{1}{3}$ litre. How much does the group drink in the afternoon?
c. How much does the group drink in the whole day?
d. Their water container holds 10 litres at the start. How much water is left at the end of the day?

Question 13

Question 13 – The ribbon shop *(Section B · Real-life practice)*

A shop sells ribbon by the metre. Fatima buys $3\frac{1}{2}$ m of red ribbon. She cuts $1\frac{3}{4}$ m off for a bow.

a. How much red ribbon is left?
b. She also buys $2\frac{1}{4}$ m of blue ribbon. How much ribbon does she have altogether now?
c. She needs 4 bows, each using $1\frac{3}{4}$ m. How much ribbon do the 4 bows need?
d. Does she have enough ribbon for the 4 bows?

Question 14

Question 14 – The water tank *(Section B · Real-life practice)*

A water tank holds $\frac{7}{8}$ of its capacity at 9 am. During the day $\frac{1}{4}$ of the capacity is used for the garden and $\frac{3}{8}$ is used by the school kitchen.

a. Write $\frac{1}{4}$ as eighths.
b. How much of the tank has been used in total?
c. What fraction of the tank is left at the end of the day?
d. The tank holds 800 litres when it is full. How many litres are left? (Find $\frac{1}{8}$ of 800 first.)

Question 15

Question 15 – Scaling a recipe *(Section C · Problem solving)*

Chef Ali has a recipe for one pot of soup that serves 4 people. He wants to make soup for 12 people, which is 3 times the recipe.

Ingredient	Amount for 4 people
Carrots	$1\frac{1}{2}$ kg
Potatoes	$\frac{3}{4}$ kg
Stock	$2\frac{1}{4}$ litres
Lentils	$\frac{5}{8}$ kg

a. How much of each ingredient does he need for 12 people?
b. What is the total mass of vegetables (carrots and potatoes) for 12 people?
c. Chef Ali has $5\frac{1}{2}$ kg of potatoes. How much more does he need for 12 people?
d. He decides to make half the recipe for 2 people. How much stock does he need?
e. Is the amount of lentils for 12 people more or less than 2 kg? Explain.

Question 16

Question 16 – Reading a book *(Section C · Problem solving)*

Jenna is reading a book with 240 pages. On Monday she reads $\frac{1}{4}$ of the book, on Tuesday $\frac{3}{8}$ of the book and on Wednesday $\frac{1}{8}$ of the book.

a. What fraction of the book does she read in the three days?
b. What fraction of the book is still to read?
c. How many pages is that?
d. How many pages did she read on Tuesday?
e. Jenna says she can finish the book if she reads $\frac{1}{4}$ of it on Thursday. Is she right?

Question 17

Question 17 – Missing fractions *(Section C · Problem solving)*

Otto wrote some fraction sums but some numbers have smudged. Work out the missing amounts.

a. $\frac{?}{8} + \frac{3}{8} = \frac{7}{8}$
b. $\frac{1}{2} + \frac{?}{4} = \frac{3}{4}$
c. $\frac{11}{12} - \frac{?}{12} = \frac{1}{2}$
d. $? \times \frac{3}{4} = \frac{9}{2}$
e. $3\frac{1}{2} + ? = 5\frac{1}{4}$

Question 18

Question 18 – Timber for the shelves *(Section C · Problem solving)*

A carpenter has a plank that is 10 m long. He cuts three shelves, each $2\frac{3}{4}$ m long, and two shorter pieces, each $\frac{5}{8}$ m long.

a. What is the total length of the three shelves?
b. What is the total length of the two shorter pieces?
c. What is the total length used? Write your answer as a mixed number.
d. How much of the plank is left over?
e. He wants a fourth shelf of $2\frac{3}{4}$ m. Is there enough plank left? Explain.

Question 19

Question 19 – Round the lake *(Section C · Problem solving)*

A path goes round Willow Lake. It is $3\frac{1}{2}$ km long. Maya and Jack run round the lake at the weekend.

a. Maya runs round the lake 3 times. How far does she run? Write the answer as a mixed number.
b. Jack runs round the lake twice and then runs another $\frac{3}{4}$ km along a side path. How far does he run?
c. Who runs further and by how much?
d. They want to run a total of 20 km between them. How much further do they need to run?
e. Next weekend each of them runs round the lake 6 times. How far does each of them run, and is the total for both of them more than 40 km?

Question 20

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

The ancient Egyptians wrote fractions as sums of different unit fractions (fractions with numerator 1). For example $\frac{3}{4} = \frac{1}{2} + \frac{1}{4}$.

a. Show that $\frac{5}{6} = \frac{1}{2} + \frac{1}{3}$.
b. Write $\frac{7}{8}$ as the sum of three different unit fractions.
c. Find two different unit fractions that add to $\frac{2}{3}$.
d. Write 1 as the sum of three different unit fractions. (Hint: start with $\frac{1}{2}$.)