Planner

Adding and subtracting fractions

- Converting between mixed numbers and improper fractions
- Adding and subtracting fractions using efficient methods
- Converting between fractions and decimals

Keywords

You should know

explanation 1a explanation 1b

1 Convert these mixed numbers into improper fractions.

a $2\frac{5}{8}$ **b** $1\frac{7}{9}$ **c** $3\frac{3}{8}$ **d** $4\frac{7}{11}$ **e** $3\frac{3}{4}$

f $5\frac{4}{5}$ **g** $8\frac{7}{9}$ **h** $4\frac{11}{12}$ **i** $9\frac{5}{6}$ **j** $7\frac{5}{8}$

2 Convert these improper fractions into mixed numbers, simplifying where possible.

a $\frac{23}{4}$ **b** $\frac{18}{5}$ **c** $\frac{9}{6}$ **d** $\frac{13}{3}$ **e** $\frac{16}{7}$

f $\frac{53}{8}$ **g** $\frac{81}{12}$ **h** $\frac{75}{20}$ **i** $\frac{81}{7}$ **j** $\frac{54}{5}$

k $\frac{63}{3}$ **l** $\frac{112}{9}$ **m** $\frac{98}{7}$ **n** $\frac{69}{15}$ **o** $\frac{78}{16}$

explanation 2a explanation 2b online

3 Match each fraction in the left-hand column of the table to its equivalent fraction in the right-hand column.

$\frac{3}{8}$	$\frac{2}{3}$
$\frac{28}{49}$	$\frac{4}{7}$
$\frac{2}{11}$	$\frac{72}{120}$
$\frac{64}{96}$	$\frac{22}{121}$
$\frac{3}{5}$	$\frac{45}{120}$

4 Find the lowest common denominator for each pair of fractions.

a $\frac{2}{3}$ and $\frac{5}{6}$ **b** $\frac{5}{8}$ and $\frac{2}{5}$ **c** $\frac{5}{7}$ and $\frac{4}{9}$ **d** $\frac{7}{12}$ and $\frac{5}{8}$

e $\frac{1}{12}$ and $\frac{7}{30}$ **f** $\frac{3}{14}$ and $\frac{2}{35}$ **g** $\frac{13}{72}$ and $\frac{5}{6}$ **h** $\frac{11}{12}$ and $\frac{5}{42}$

5 Add each pair of fractions. Simplify your answers where possible.

a $\frac{3}{8}+\frac{1}{4}$ **b** $\frac{5}{7}+\frac{3}{14}$ **c** $\frac{7}{12}+\frac{5}{8}$ **d** $\frac{9}{15}+\frac{7}{10}$

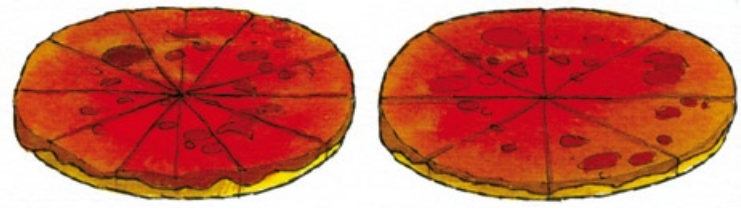
e $\frac{2}{7}+\frac{1}{6}$ **f** $\frac{3}{11}+\frac{4}{9}$ **g** $\frac{1}{13}+\frac{3}{5}$ **h** $\frac{7}{9}+\frac{5}{6}$

6 Work these out.

a $\frac{5}{12}+\frac{1}{36}$ **b** $\frac{11}{12}+\frac{1}{5}$ **c** $\frac{4}{9}+\frac{5}{7}$ **d** $\frac{3}{14}+\frac{10}{21}$

e $\frac{7}{9}+\frac{5}{6}$ **f** $\frac{5}{24}+\frac{3}{8}$ **g** $\frac{9}{16}+\frac{13}{24}$ **h** $\frac{16}{21}+\frac{9}{14}$

7 Tom and his brother cooked two pizzas. Tom ate $\frac{11}{12}$ of the first one, and his brother ate $\frac{7}{8}$ of the second one. What fraction of a pizza was left?



8 Each month Saba's employer deducts $\frac{3}{8}$ of her salary for tax, $\frac{1}{16}$ for insurance and $\frac{1}{6}$ for her pension. What fraction of her pay is deducted each month?

9 A gas supplier gives customers a discount of $\frac{1}{16}$ of their bill if they pay on time, and a further discount of $\frac{1}{12}$ of the bill if they pay by direct debit. What fraction of the bill is deducted altogether if a customer pays on time by direct debit?

10 Work these out.

a $\frac{3}{4}-\frac{3}{8}$ **b** $\frac{11}{12}-\frac{5}{6}$ **c** $\frac{7}{9}-\frac{4}{7}$ **d** $\frac{5}{6}-\frac{3}{5}$

e $\frac{8}{21}-\frac{3}{14}$ **f** $\frac{4}{5}-\frac{3}{8}$ **g** $\frac{2}{3}-\frac{5}{8}$ **h** $\frac{11}{15}-\frac{12}{45}$

11 Simplify where possible then work these out.

a $\frac{33}{55} - \frac{14}{77}$ **b** $\frac{10}{12} - \frac{19}{30}$ **c** $\frac{15}{20} - \frac{4}{8}$ **d** $\frac{20}{30} - \frac{10}{16}$

e $\frac{45}{60} - \frac{3}{18}$ **f** $\frac{13}{15} - \frac{6}{16}$ **g** $\frac{39}{52} - \frac{16}{64}$ **h** $\frac{16}{18} - \frac{3}{9}$

12 Work these out.

a $\frac{7}{8} + \frac{3}{4} - \frac{1}{2}$ **b** $\frac{7}{24} + \frac{7}{12} - \frac{5}{6}$ **c** $\frac{1}{2} + \frac{1}{5} - \frac{1}{3}$ **d** $\frac{3}{4} - \frac{1}{3} + \frac{5}{6}$

explanation 3a explanation 3b explanation 3c online

13 Work these out.

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

e $5\frac{1}{6} + 7\frac{4}{7}$ **f** $2\frac{1}{2} + 4\frac{1}{3}$ **g** $8\frac{5}{8} + 3\frac{3}{11}$ **h** $6\frac{8}{15} + 4\frac{9}{45}$

14 Work these out.

a $2\frac{4}{5} - 1\frac{1}{2}$ **b** $2\frac{2}{3} - \frac{3}{5}$ **c** $5\frac{5}{6} - 3\frac{2}{3}$ **d** $4\frac{5}{8} - 1\frac{7}{24}$

15 Work these out.

a $5\frac{1}{6} + 3\frac{2}{3}$ **b** $2\frac{1}{7} + 13\frac{1}{5}$ **c** $7\frac{11}{12} - 2\frac{3}{16}$ **d** $8\frac{2}{9} - 4\frac{3}{7}$

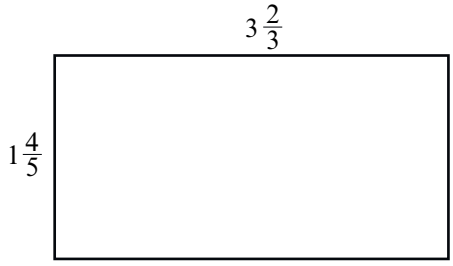
16 One photograph is $5\frac{1}{4}$ inches wide and another is $7\frac{5}{8}$ inches wide.

Narinder wants to paste them side by side in a book.

What is the minimum width the page in the book must be?

17 Liz made lemonade which filled two bottles. One bottle held $2\frac{4}{5}$ litres and the other $1\frac{1}{4}$ litres. How much more lemonade was in the larger bottle?

18 These are the dimensions of a storeroom in yards.
Work out the perimeter of the room using an efficient strategy.



19 The table shows some of the ingredients for a cake.

Ingredient	Actual weight (ounces)
Flour	$3\frac{3}{4}$
Sugar	$4\frac{1}{8}$
Margarine	$4\frac{1}{4}$
Sultanas	$3\frac{3}{8}$

a Find the total weight of the flour and sugar.

b Find the difference between the weight of the sugar and sultanas.

c Find the total weight of the margarine and sultanas.

d Find the total weight of all four ingredients.

explanation 4a explanation 4b

20 Convert these fractions to decimals.

a $\frac{3}{4}$ **b** $\frac{5}{8}$ **c** $\frac{7}{20}$ **d** $\frac{16}{25}$

21 Which of these fractions could you express as a terminating decimal?
Convert each fraction into a terminating decimal or a decimal to 2 d.p.

a $\frac{3}{4}$ **b** $\frac{20}{25}$ **c** $\frac{64}{200}$ **d** $\frac{22}{91}$ **e** $\frac{18}{72}$