

Adding and subtracting fractions

Year 8 About 65 minutes No calculator 51 marks



Hints online, answers free with an account:
mathswariz.uk/worksheets/ks3-year-8-adding-and-subtracting-fractions/

Date _____

A Do Now

Quick questions to start.

- A1** Needed today [1 mark] Find the lowest common multiple of 8 and 12.
- A2** Needed today [1 mark] Write $3\frac{5}{8}$ as an improper fraction.

Answer

Answer

- A3** Last lesson [1 mark] A triangle has sides 20 cm, 21 cm and 29 cm. Is it right-angled? Show how you know.
- A4** From chapter 1 [1 mark] Increase £80 by 15%.

Answer

Answer

B Example, then your turn

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Your teacher works through each example with you. Then try the one beside it.

EXAMPLE 1

Work out $\frac{7}{9} + \frac{5}{12}$. Give your answer as a mixed number.

Hint The lowest common multiple of 9 and 12 is 36. Change both fractions to thirty-sixths.

- B1** Work out (i) $\frac{7}{10} + \frac{5}{6}$ (ii) $\frac{11}{12} - \frac{3}{8}$. [2 marks]
 Give each answer in its simplest form.

Answer (i) (ii)

EXAMPLE 2

Work out $3\frac{5}{8} + 2\frac{3}{4}$.

Hint Add the whole numbers first. Then add the fraction parts, using eighths.

- B2** Work out $4\frac{2}{3} + 3\frac{5}{7}$. [2 marks]

Answer

EXAMPLE 3

Work out $7\frac{1}{4} - 3\frac{5}{6}$.

Hint $\frac{1}{4}$ is smaller than $\frac{5}{6}$. Either change both to improper fractions, or exchange one whole for twelfths.

B3 Work out $9\frac{1}{6} - 4\frac{4}{9}$. [2 marks]

Answer

EXAMPLE 4

Work out $5\frac{1}{2} - 2\frac{2}{3} + 1\frac{3}{4}$.

Hint Deal with the whole numbers: $5 - 2 + 1 = 4$. Then the fractions, in twelfths.

B4 Work out $6\frac{1}{3} - 3\frac{3}{4} + 2\frac{1}{6}$. [3 marks]

Answer

EXAMPLE 5

A ribbon is $6\frac{3}{4}$ m long. Ella cuts off a piece $1\frac{5}{6}$ m long and another piece $2\frac{2}{3}$ m long. How much ribbon is left?

Hint Add the two pieces first, then take the total away from $6\frac{3}{4}$.

B5 A tank holds 10 litres of water. [3 marks]

Jay pours out $2\frac{3}{5}$ litres and then $1\frac{3}{4}$ litres. How much water is left in the tank?

Answer

c Practice

Year 8

C1 The cross-multiply method says [2 marks]

$$\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$$

Use it to work out $\frac{3}{8} + \frac{5}{12}$. Give your answer in its simplest form.

Answer

C2 Work out the missing number: [2 marks]

$$2\frac{4}{5} + \square = 7\frac{1}{3}$$

Answer

- C3** Work out the mean of these [3 marks]
three lengths: $1\frac{5}{6}$ cm, $2\frac{1}{4}$ cm and $3\frac{2}{3}$ cm.

Answer

- C4** You are told that [2 marks]

$$5\frac{3}{4} + 2\frac{5}{7} = 8\frac{13}{28}$$

Use this to write down (i)

$$8\frac{13}{28} - 2\frac{5}{7} \quad \text{(ii)} \quad \frac{3}{4} + \frac{5}{7}.$$

Answer (i) (ii)

- C5** Which is larger, $\frac{3}{4} + \frac{2}{9}$ or $\frac{5}{6} + \frac{1}{8}$? [2 marks]
Show your working.

Answer is larger

D Exam-style questions

GCSE Foundation

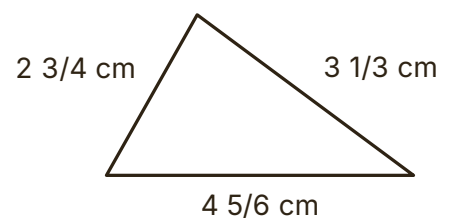
- D1** Ben works out $6\frac{1}{3} - 2\frac{3}{4}$. He writes: " $6 - 2 = 4$ and $\frac{3}{4} - \frac{1}{3} = \frac{5}{12}$, so the answer is $4\frac{5}{12}$." [3 marks]

Ben is wrong. Explain his mistake and work out the correct answer.

Answer Correct answer

- D2** The diagram shows a triangle.

- (a) Work out the perimeter of the triangle. [2 marks]



Answer

- (b) A second triangle has a perimeter of $12\frac{1}{2}$ cm. How much longer is this perimeter than the first? [2 marks]

Not drawn accurately

Answer

Total for D2: 4 marks

D3 Jo has a garden. She uses $\frac{3}{8}$ of it for vegetables and $\frac{1}{3}$ of it for flowers. The rest of the garden is grass.

(a) What fraction of the garden is grass? [2 marks]

Answer

(b) The grass covers 35 m^2 . Work out the area of the whole garden. [2 marks]

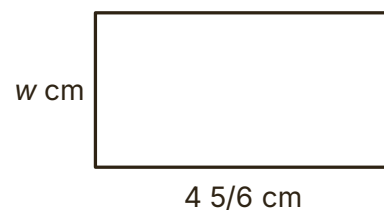
Answer

(c) How many more square metres are used for vegetables than for flowers? [2 marks]

Answer

Total for D3: 6 marks

D4 A rectangle has a perimeter of $15\frac{1}{2}$ cm. Its length is $4\frac{5}{6}$ cm. Work out its width, w . [4 marks]
You must show your working.



Answer $w = \dots\dots \text{ cm}$ Not drawn accurately

D5 Show that $\frac{1}{2} + \frac{1}{3} + \frac{1}{7} + \frac{1}{42} = 1$. [3 marks]

No route is given. The hints are at the end of the sheet. Use one at a time.

- E1** a and b are positive whole numbers and $\frac{a}{6} + \frac{b}{10} = \frac{47}{30}$. Find every possible pair of values of a and b . [4 marks]

Answer

Extension hints

Cover these with paper. Uncover one at a time.

- E1** **Hint 1** Write both fractions with the denominator 30.
Hint 2 $\frac{5a}{30} + \frac{3b}{30} = \frac{47}{30}$, so $5a + 3b = 47$.
Hint 3 Try $a = 1, 2, 3, \dots$ up to 9. Keep each a that makes $47 - 5a$ a multiple of 3.

How did it go?

Colour one circle on each line: not yet, nearly, yes.

I can add and subtract fractions with different denominators. ☐ ☐ ☐

I can add and subtract mixed numbers, exchanging a whole when I need to. ☐ ☐ ☐

I can choose an efficient method for a calculation. ☐ ☐ ☐

I can solve problems in words with fractions. ☐ ☐ ☐