

Add and Subtract Fractions

1) Evaluate, giving your answer in its simplest form.

a) $\frac{5}{6} - \frac{1}{6}$

b) $\frac{2}{7} + \frac{4}{7}$

c) $\frac{7}{8} + \frac{5}{8}$

d) $\frac{3}{4} + \frac{1}{8}$

e) $\frac{3}{8} - \frac{1}{12}$

f) $\frac{9}{10} - \frac{7}{15}$

g) $\frac{11}{12} - \frac{5}{9}$

h) $\frac{3}{4} - \frac{5}{6}$

i) $-\frac{1}{2} - \frac{3}{8}$

2) On a lovely sunny day, I walked for $\frac{7}{9}$ km. For $\frac{1}{6}$ km I was wearing my coat.

Find out the distance I walked without my coat on.

3) A sink contains $\frac{3}{4}$ litre of water. I turn on the tap and add in another $\frac{5}{12}$ litre of water, but unfortunately $\frac{1}{15}$ litre of water spills out. How much water is left in the sink?

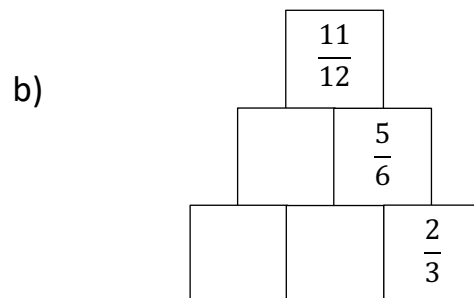
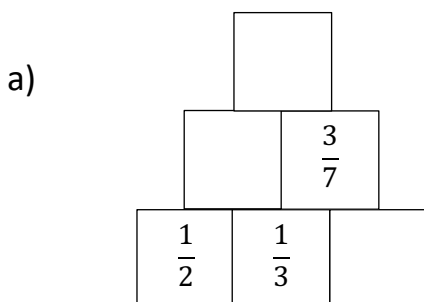
4) Find the missing numbers indicated with a ?

a) $\frac{4}{5} + ? = \frac{17}{20}$

b) $\frac{7}{8} - ? = \frac{5}{6}$

c) $? + ? = \frac{7}{10}$

5) In an addition pyramid, you add the two bricks below and place the answer in the brick above them, in between them. Fill in all the missing bricks.



6) The Egyptians of 3000 BC had an interesting way to represent fractions.

Although they had a notation for $\frac{1}{2}$ and $\frac{1}{3}$ and $\frac{1}{4}$ (called **unit fractions**) their notation did not allow them to write $\frac{2}{5}$ or $\frac{3}{4}$ as we would today.

Instead, they were able to write *any* fraction as **a sum of unit fractions** where **all the unit fractions were different**.

For example,

$$\frac{3}{4} = \frac{1}{2} + \frac{1}{4}$$

Can you find the ? in order to make this correct

$$\frac{6}{7} = \frac{1}{2} + \frac{1}{3} + ?$$

A fraction written as a sum of distinct unit fractions is called an **Egyptian Fraction**.

Try to rewrite the following fractions as an Egyptian Fraction (written as the sum of 2 or more unit fractions):

1) $\frac{2}{3}$ 2) $\frac{4}{5}$ 3) $\frac{3}{11}$ 4) $\frac{2}{7}$ 5) $\frac{5}{8}$ 6) $\frac{13}{12}$

Jack noticed that he could write each unit fraction as a sum of exactly 2 different unit fractions for the following fractions:

$$\frac{1}{2} = \frac{1}{3} + \frac{1}{6}$$

$$\frac{1}{5} = \frac{1}{6} + \frac{1}{30}$$

Can you describe the pattern? Why does this always work?

Answers 1a) $\frac{2}{3}$ b) $\frac{6}{7}$ c) $1\frac{1}{2}$ d) $\frac{7}{8}$ e) $\frac{7}{24}$ f) $\frac{13}{30}$ g) $\frac{13}{36}$ h) $-\frac{1}{12}$ i) $-\frac{7}{8}$ 2) $\frac{11}{18}$ km 3) $1\frac{1}{10}$ litre

4a) $\frac{1}{20}$ b) $\frac{1}{24}$ c) $\frac{7}{20}$ 5) from top to bottom, left to right a) $1\frac{11}{42}, \frac{5}{6}, \frac{2}{21}$ b) $\frac{1}{12}, -\frac{1}{12}, \frac{1}{6}$ 6) $\frac{1}{42}$