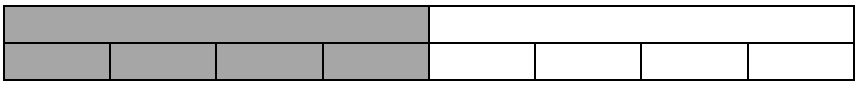
Level 3 Revision: Fractions

A: Equivalent Fractions

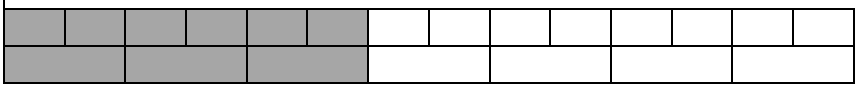
Reminders

$\frac{5}{6}$ of the bar above are shaded i.e. 5 out of 6 equal parts. The diagrams below show pairs of fractions that are the same amount of a whole i.e. equivalent fractions.



$\frac{1}{2} = \frac{4}{8}$

$\frac{4}{5} = \frac{16}{20}$



$\frac{6}{14} = \frac{3}{7}$

We can make equivalent fractions by multiplying or dividing the numerator and denominator by the same number, e.g: -

$\frac{3}{4} = \frac{15}{20}$

(Multiplied top and bottom of first fraction by 5)

$\frac{9}{12} = \frac{3}{4}$

(Divided top and bottom of first fraction by 3)

$\frac{2}{3} = \frac{14}{21}$

(Multiplied top and bottom of first fraction by 7)

$\frac{27}{36} = \frac{3}{4}$

(Divided top and bottom of first fraction by 9)

Now copy and complete these pairs of equivalent fractions: -

1) $\frac{4}{7} = \frac{8}{\square}$ **2)** $\frac{1}{3} = \frac{\square}{30}$ **3)** $\frac{8}{10} = \frac{4}{\square}$ **4)** $\frac{24}{48} = \frac{\square}{12}$

5) $\frac{7}{10} = \frac{28}{\square}$ **6)** $\frac{3}{4} = \frac{\square}{32}$ **7)** $\frac{10}{12} = \frac{5}{\square}$ **8)** $\frac{36}{48} = \frac{\square}{24}$

B: Simplifying Fractions

Reminders

Look at these examples: -

$\frac{21}{28} = \frac{3}{4}$

$\frac{72}{96} = \frac{36}{48} = \frac{18}{24} = \frac{9}{12} = \frac{3}{4}$

Notice that simplifying allows us to see that two fractions which looked quite different are in fact equivalent – that's why, whenever you get a fraction as an answer, you should try to simplify it.

Sometimes it is necessary keep dividing until the fraction cannon be simplified any further.

Could you have simplified the second example in fewer steps?

Nos simplify these fractions: -

1) $\frac{12}{18}$ **2)** $\frac{20}{30}$ **3)** $\frac{6}{9}$ **4)** $\frac{14}{21}$

5) $\frac{24}{36}$ **6)** $\frac{42}{63}$ **7)** $\frac{40}{60}$ **8)** $\frac{100}{150}$

C: Comparing fractions

Reminders

Comparing $\frac{1}{7}$ and $\frac{7}{9}$ it is easy to see which is bigger – one is much less than a half and one is clearly greater.

Comparing $\frac{7}{9}$ and $\frac{8}{10}$ it is not so easy to decide which fraction is bigger – both are more than half.

To solve this problem we can convert both to equivalent fractions with a common denominator 90 (9 × 10).

$\frac{7}{9} = \frac{70}{90}$ (multiplied top and bottom by 10)

$\frac{8}{10} = \frac{72}{90}$ (multiplied top and bottom by 9)

$\frac{72}{90}$ is greater than $\frac{70}{90}$ so $\frac{8}{10}$ is the bigger fraction

Now convert the following pairs of fractions to equivalent fractions with a common denominator and then state which is larger: -

1) $\frac{1}{3}$ and $\frac{2}{7}$

2) $\frac{3}{5}$ and $\frac{2}{3}$

3) $\frac{3}{4}$ and $\frac{5}{7}$

4) $\frac{5}{6}$ and $\frac{4}{5}$

5) $\frac{3}{7}$ and $\frac{4}{9}$

6) $\frac{1}{5}$ and $\frac{2}{9}$

7) $\frac{4}{5}$ and $\frac{7}{9}$

8) $\frac{1}{5}$ and $\frac{2}{7}$