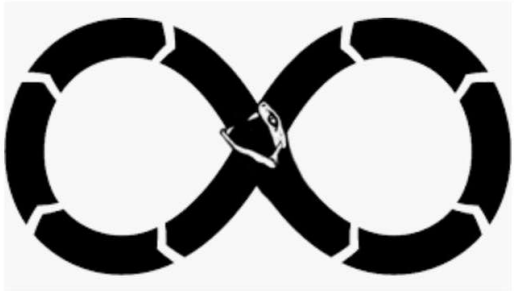
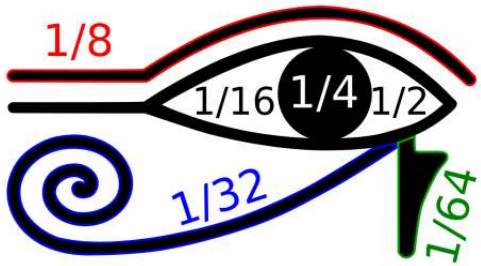
Did you know ?

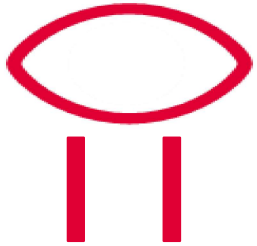


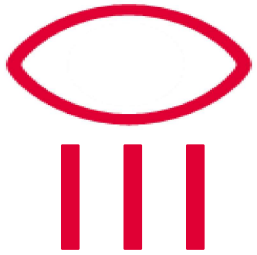
Ouroboros

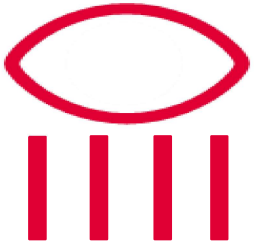


The eye of Horus

5000 years ago the Egyptians used fractions but could only write unit fractions, fractions where the numerator is 1.

$\frac{1}{2}$ = 

$\frac{1}{3}$ = 

$\frac{1}{4}$ = 

All other fractions were written as sums of unit fractions but more about that later……

Fractions 1

1. What is the value of $\frac{2006}{8} + \frac{6002}{8}$

2. There are 84 animals in a field
   11 are cows
   45 are sheep
   The rest are pigs

   What fraction of the animals are pigs?
   Give you answer in simplest form

3. Simplify fully $\frac{x}{6} + \frac{3x}{4}$

4. Calculate $\frac{5}{6} \times \frac{3}{5}$
   give your answer in simplest form

5. What is the value of $\frac{4}{1\frac{3}{4}}$

6. How many of these calculations equal 1
   Give reasons

   $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} - \frac{1}{2}$ $\frac{1}{2} \times \frac{1}{2}$ $\frac{1}{2} \div \frac{1}{2}$

7. Sally has 30m of ribbon.
   She cuts lengths of $2\frac{3}{5}$ metres from the ribbon. Sally says she has enough ribbon to cut 12 lengths. Is she correct?
   You must show all workings

8. Express as a single fraction $\frac{2a}{3} - \frac{b}{4}$

Fractions 1

Solutions on the next slide….

Fractions 1 Solutions

1. What is the value of $\frac{2006}{8} + \frac{6002}{8}$

→ $\frac{8008}{8} = 1001$

2. There are 84 animals in a field
   11 are cows
   45 are sheep
   The rest are pigs

   What fraction of the animals are pigs?
   Give you answer in simplest form

→ $84 - (11 + 45) = 28$

So 28 animals are pigs

which is $\frac{28}{84} = \frac{1}{3}$

3. Simplify fully $\frac{x}{6} + \frac{3x}{4}$

→ Need a common denominator to add fractions

e.g. $\frac{x}{6} \overset{(x4)}{\underset{(x4)}{}} + \frac{3x}{4} \overset{(x6)}{\underset{(x6)}{}} = \frac{4x}{24} + \frac{18x}{24} = \frac{22x}{24}$

$= \frac{11x}{12}$

4. Calculate $\frac{5}{6} \times \frac{3}{5}$

   give your answer in simplest form

→ $\frac{5}{6} \times \frac{3}{5} = \frac{5 \times 3}{6 \times 5} = \frac{15}{30} = \frac{1}{2}$

Unsure about any of these? Search Fractions Then try Skills check 2 to reassess yourself.

Fractions 1 Solutions

5. What is the value of $\dfrac{4}{1\frac{3}{4}}$

$$\frac{4}{1\frac{3}{4}} = 4 \div \frac{7}{4} = 4 \times \frac{4}{7} = \frac{16}{7}$$

6. How many of these calculations equal 1
   Give reasons

$\frac{1}{2}+\frac{1}{2}$ $\quad \frac{1}{2}-\frac{1}{2}$ $\quad \frac{1}{2}\times\frac{1}{2}$ $\quad \frac{1}{2}\div\frac{1}{2}$

$\frac{1}{2}+\frac{1}{2}$ $\quad \frac{1}{2}-\frac{1}{2}$ $\quad \frac{1}{2}\times\frac{1}{2}$ $\quad \frac{1}{2}\div\frac{1}{2}$

$\frac{1}{2}-\frac{1}{2}=0$ $\quad \frac{1}{2}\times\frac{1}{2}=\frac{1}{4}$ $\quad \frac{1}{2}\div\frac{1}{2}=\frac{1}{2}\times\frac{2}{1}=\frac{2}{2}$

7. Sally has 30m of ribbon.
   She cuts lengths of $2\frac{3}{5}$ metres from the ribbon. Sally says she has enough ribbon to cut 12 lengths. Is she correct?
   You must show all workings

Compare $12 \times 2\frac{3}{5}$ *to* $30\ m$

either: $12 \times 2\frac{3}{5} = 12 \times \frac{13}{5} = \frac{156}{5} = 31\frac{1}{5}$

or: $\frac{3}{5} \times 12 = \frac{36}{5} = 7\frac{1}{5}$, $2 \times 12 = 24$

$24 + 7\frac{1}{5} = 31\frac{1}{5}$ No. $31\frac{1}{5} > 30$

8. Express as a single fraction $\dfrac{2a}{3}-\dfrac{b}{4}$

$$\frac{2a}{3}\ {}^{(\times 4)}_{(\times 4)} - \frac{b}{4}\ {}^{(\times 3)}_{(\times 3)} = \frac{8a}{12} - \frac{3b}{12} = \frac{8a-3b}{12}$$

Unsure about any of these? Search Fractions Then try Skills check 2 to reassess yourself.

Fractions 2

1. Calculate $2\frac{1}{7} + 1\frac{1}{5}$
   Give your answer as a mixed number in simplest form

2. Simplify $\frac{4a}{5} \times \frac{7b}{3}$

3. Work out $\frac{19}{24} - \frac{3}{8}$
   giving your answer in simplest form

4. Find the mean of $\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ and $\frac{1}{6}$
   give your answer in simplest form

5. A full glass of water can hold $\frac{1}{6}$ of a bottle of water.
   How many glasses can be filled by $2\frac{1}{5}$ bottles?

6. A water tank is $\frac{2}{3}$ full
   40 litres of water are taken from the tank
   The tank is now $\frac{1}{2}$ full
   What fraction of the tank was removed ?

7. Which of these has the largest value

$\frac{1}{2} + \frac{1}{4}$ $\frac{1}{2} - \frac{1}{4}$ $\frac{1}{2} \times \frac{1}{4}$ $\frac{1}{2} \div \frac{1}{4}$ $\frac{1}{4} \div \frac{1}{2}$

8. Simplify $\frac{a}{b} + \frac{b}{c}$

You can do this for fun - or move on if you correctly completed Skills check 1.

Fractions 2

Solutions on the next slide….

Fractions 2 Solutions

1. Calculate $2\frac{1}{7} + 1\frac{1}{5}$
   Give your answer as a mixed number in simplest form

$$2\frac{1}{7} + 1\frac{1}{5} = \frac{15}{7} + \frac{6}{5}$$

$$\begin{matrix}(x5)\\(x5)\end{matrix}\frac{15}{7} + \begin{matrix}(x7)\\(x7)\end{matrix}\frac{6}{5} = \frac{75}{35} + \frac{42}{35} = \frac{117}{35}$$

$$= 3\frac{12}{35}$$

2. Simplify $\frac{4a}{5} \times \frac{7b}{3}$

$$\frac{4a}{5} \times \frac{7b}{3} = \frac{4a \times 7b}{5 \times 3} = \frac{28ab}{15}$$

3. Work out $\frac{19}{24} - \frac{3}{8}$
   giving your answer in simplest form

$$\frac{19}{24} - \begin{matrix}(x3)\\(x3)\end{matrix}\frac{3}{8} = \frac{19}{24} - \frac{9}{24} = \frac{10}{24} = \frac{5}{12}$$

4. Find the mean of $\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ and $\frac{1}{6}$
   give your answer in simplest form

Add the fractions together and then divide by 4
Change all the fractions to have the denominator 12

$$\frac{6}{12} + \frac{4}{12} + \frac{3}{12} + \frac{2}{12} = \frac{15}{12} = \frac{5}{4}$$

$$\frac{5}{4} \div 4 = \frac{5}{4} \times \frac{1}{4} = \frac{5}{16}$$

Fractions 2 Solutions

5. A full glass of water can hold $\frac{1}{6}$ of a bottle of water. How many glasses can be filled by $2\frac{1}{5}$ bottles?

$$\frac{11}{5} \div \frac{1}{6} = \frac{11}{5} \times \frac{6}{1} = \frac{66}{5} = 13\frac{1}{5}$$

=13 glasses

Solution

6. A water tank is $\frac{2}{3}$ full
Some water is taken from the tank
The tank is now $\frac{1}{2}$ full. What fraction of the tank was removed ?

$$\frac{2}{3} - \frac{1}{2} = \frac{4}{6} - \frac{3}{6} = \frac{1}{6}$$

7. Which of these has the largest value

$\frac{1}{2}+\frac{1}{4}$ $\frac{1}{2}-\frac{1}{4}$ $\frac{1}{2}\times\frac{1}{4}$ $\frac{1}{2}\div\frac{1}{4}$ $\frac{1}{4}\div\frac{1}{2}$

$= \frac{3}{4}$ $= \frac{1}{4}$ $= \frac{1}{8}$ $= \frac{4}{2} = 2$ $= \frac{2}{4}$

8. Simplify $\frac{a}{b} + \frac{b}{c}$

$$\frac{a}{b} + \frac{b}{c} = \frac{(xc)}{(xc)}\frac{a}{b} + \frac{(xb)}{(xb)}\frac{b}{c} = \frac{ac}{bc} + \frac{b^2}{bc}$$

$$= \frac{ac+b^2}{bc}$$