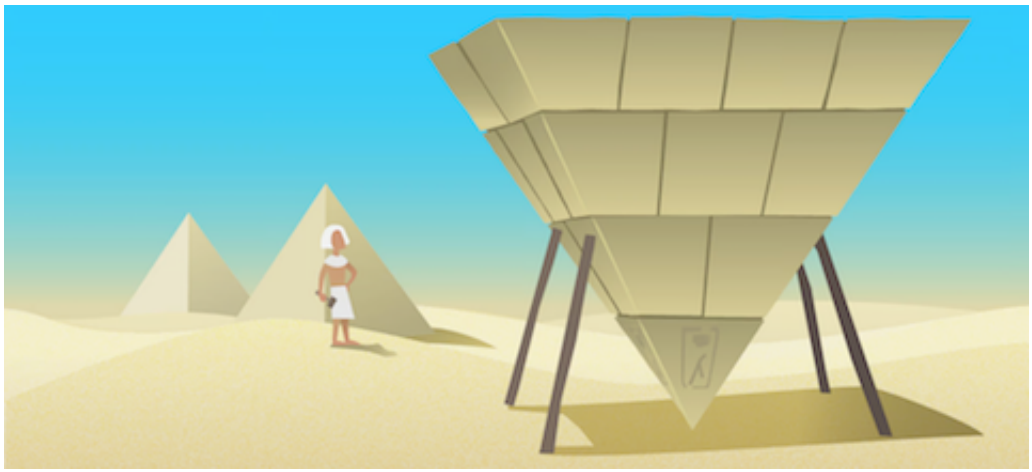
Lesson 3

Year 6, Primary 6, Mathematics
Vulgar Fractions

Top Heavy Fractions



Having trouble understanding top heavy fractions ?
Our helpline is open 24/7

3.1 What is a top heavy fraction ?

A ***top heavy fraction*** (also called an ***improper fraction***) is one where the numerator is greater than the denominator.

For example, $\frac{24}{7}$ is top heavy.

They can be written as ***mixed number fractions*** by doing bus stop division.

Example #1

To write $\frac{98}{3}$ as a mixed number fraction do the following;

$$\frac{98}{3} \Rightarrow 3\overline{)98} \Rightarrow \begin{array}{r} 32\ r\ 2 \\ 3\overline{)98} \end{array} \Rightarrow 32 + \frac{2}{3}$$

$$\frac{98}{3} = 32\frac{2}{3}$$

Example #2

To write $\frac{69}{5}$ as a mixed number fraction do the following;

$$\frac{69}{5} \Rightarrow 5\overline{)69} \Rightarrow \begin{array}{r} 13\ r\ 4 \\ 5\overline{)6^{1}9} \end{array} \Rightarrow 13 + \frac{4}{5}$$

$$\frac{69}{5} = 13\frac{4}{5}$$

Being able to do the reverse process (turn a mixed number fraction to one that is top heavy) is also useful. The next two examples show how to do this.

Example #3

To write $32\frac{2}{3}$ as a top heavy fraction do the following;

$$32\frac{2}{3} = 32 + \frac{2}{3}$$

$$= \frac{32}{1} + \frac{2}{3} \qquad \text{Because } 32 = \frac{32}{1}$$

$$= \frac{32}{1} \times \mathbf{1} + \frac{2}{3} \qquad \text{Lesson 1 technique}$$

$$= \frac{32}{1} \times \frac{\mathbf{3}}{\mathbf{3}} + \frac{2}{3} \qquad \text{Lesson 1 technique}$$

$$= \frac{96}{3} + \frac{2}{3} \qquad \text{Lesson 1 technique}$$

$$= \frac{98}{3} \qquad \text{Lesson 1 technique}$$

Example #4

To write $13\frac{4}{3}$ as a top heavy fraction do the following;

$$13\frac{4}{5} = 13 + \frac{4}{5}$$

$$= \frac{13}{1} + \frac{4}{5} \qquad \text{Because } 13 = \frac{13}{1}$$

$$= \frac{13}{1} \times \mathbf{1} + \frac{4}{5} \qquad \text{Lesson 1 technique}$$

$$= \frac{13}{1} \times \frac{\mathbf{5}}{\mathbf{5}} + \frac{4}{5} \qquad \text{Lesson 1 technique}$$

$$= \frac{65}{5} + \frac{4}{5} \qquad \text{Lesson 1 technique}$$

$$= \frac{69}{5} \qquad \text{Lesson 1 technique}$$

3.2 Exercise

Marks Available : 16

Question 1

Write the following top heavy fractions as mixed number fractions.

(i) $\frac{7}{3}$ **(ii)** $\frac{56}{5}$

(iii) $\frac{93}{4}$ **(iv)** $\frac{31}{7}$

[8 marks]

Question 2

Write the following mixed number fractions as top heavy fractions.

(i) $4\frac{2}{5}$ **(ii)** $9\frac{3}{4}$

(iii) $50\frac{5}{6}$ **(iv)** $108\frac{1}{3}$

[8 marks]

3.3 Fast Conversion Formula

The mixed number fraction $a\frac{b}{c}$ has top heavy equivalent $\frac{ac + b}{c}$

Example #5

$$20\frac{3}{4} = \frac{20 \times 4 + 3}{4}$$
$$= \frac{80 + 3}{4}$$
$$= \frac{83}{4}$$

Example #6

$$5\frac{6}{7} = \frac{5 \times 7 + 6}{7}$$
$$= \frac{35 + 6}{7}$$
$$= \frac{41}{7}$$

3.4 Exercise

Marks Available : 30

Question 1

Use the Fast Conversion Formula to write as top heavy fractions;

(i) $8\frac{3}{11}$ **(ii)** $15\frac{2}{3}$

(iii) $7\frac{9}{10}$ **(iv)** $25\frac{3}{4}$

[8 marks]

Question 2

(i) List the first six multiples of 6

[1 mark]

(ii) List the first six multiples of 9

[1 mark]

(iii) What is *lcm*{6,9} ?

[1 mark]

(iv) Showing all the steps, work out $3\frac{5}{6} - 2\frac{5}{9}$

[8 marks]

Question 3

(i) List the first six multiples of 4

[1 mark]

(ii) List the first six multiples of 10

[1 mark]

(iii) What is $lcm\{4,10\}$?

[1 mark]

(iv) Showing all the steps, work out $5\frac{3}{4} + 3\frac{3}{10}$

[8 marks]