

Fractions – *Mixed Numbers, Decimals and Percent*

To review advanced concepts Fractions, watch the following set of YouTube videos explaining the basic techniques for converting mixed numbers to improper fractions and conversions between fractions, decimals and percentages. Following the videos are some practice problems for you to try, covering all the basic techniques, with answers and detailed solutions. Some additional resources are included for more practice at the end.

1. [Mixed Numbers](#)
2. [Convert Mixed numbers to improper fractions](#)
3. [Convert Improper fractions to mixed numbers](#)
4. [Multiplying Mixed numbers](#)
5. [Dividing mixed numbers](#)
6. [Adding mixed numbers](#)
7. [Subtracting mixed numbers](#)
8. [Adding mixed numbers with regrouping](#)
9. [Subtracting Mixed Numbers with Regrouping -Example 1](#)
[Subtracting Mixed Numbers with Regrouping -Example 2](#)
10. [What Are Percentages?](#)
11. [Convert any Fraction to a Decimal](#)
12. [Decimal Arithmetic](#)

Practice problems: The following problems with answers use the techniques demonstrated in the above videos. Detailed solutions, if you need them, are provided after the answer section. For further assistance and help please contact [Math Assistance Area](#).

1. Classify them as zero, proper, improper or undefined fractions.
a) $\frac{5}{112}$ b) $\frac{2037}{1000}$ c) $\frac{0}{98}$ d) $\frac{2}{0}$
2. Convert the following mixed numbers to improper fractions
a) $3\frac{1}{4}$ b) $10\frac{13}{100}$ c) $11\frac{2}{9}$ d) $7\frac{7}{30}$
3. Convert the following improper fractions to mixed numbers
a) $\frac{10}{3}$ b) $\frac{9011}{9}$ c) $\frac{12}{7}$ d) $\frac{222}{15}$
4. Simplify the following fractions and express the answers in lowest terms.
a) $\frac{3}{36}$ b) $\frac{50}{20}$ c) $\frac{66}{11}$ d) $\frac{2220}{5}$

5. Evaluate and express the answer as a mixed number in lowest terms

a) $3\frac{1}{3} \times 6\frac{2}{3}$

b) $9\frac{1}{4} \times \frac{1}{2}$

c) $5\frac{1}{6} \times 2\frac{3}{4}$

d) $11\frac{1}{2} \times \frac{3}{2}$

e) $5\frac{1}{3} \div 1\frac{1}{3}$

f) $7\frac{1}{9} \div \frac{9}{10}$

g) $2\frac{9}{12} \div \frac{3}{4}$

h) $7\frac{1}{18} \div \frac{3}{20}$

6. Evaluate:

a) $5\frac{1}{24} + 1\frac{9}{24}$

b) $6\frac{2}{5} + 21\frac{1}{5}$

c) $27\frac{4}{9} + 2\frac{1}{3}$

d) $13\frac{1}{3} + 11\frac{8}{27}$

e) $8\frac{3}{4} - 6\frac{7}{16}$

f) $1\frac{5}{8} - 1\frac{1}{8}$

g) $12\frac{4}{5} - 1\frac{1}{25}$

h) $30\frac{4}{7} - 20\frac{5}{21}$

7. Use regrouping to evaluate the following and express the answers in mixed numbers in lowest terms

a) $12\frac{8}{9} + 7\frac{7}{9}$

b) $15\frac{41}{44} + 20\frac{9}{11}$

c) $6\frac{4}{5} + 21\frac{1}{5}$

d) $17\frac{15}{16} + 19\frac{1}{8}$

e) $33\frac{1}{24} - 31\frac{8}{12}$

f) $8\frac{2}{3} - 6\frac{12}{15}$

g) $1\frac{1}{30} - \frac{1}{15}$

h) $9\frac{6}{7} - 3\frac{13}{14}$

8. Fill in the missing parts:

<i>Fraction</i>	<i>Decimal</i>	<i>Percentage</i>
a) $\frac{1}{2}$	b)	c)
d)	e) 0.05	f)
g)	h)	i) 66%
j)	k) 0.08	l)
m)	n)	o) 111%
p) $\frac{2}{5}$	q)	r)

9. Graph the following on the number line provided

a) $6\frac{1}{2}$

b) $-4\frac{3}{4}$

c) $\frac{0}{9128}$

d) $\frac{12}{16}$

e) 3.25

f) -1.5



10. Evaluate the following:

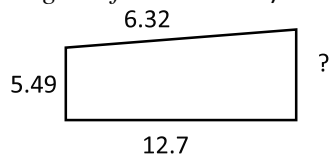
a) $32.68 + 9.6$

b) $12.324 + 348.75$

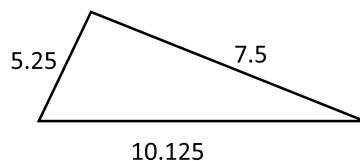
c) $34.12 - 78.5$

d) $17.67 - 9.432$

e) If the **perimeter** of the following figure is 33 what is the length of the missing side (Hint: *Perimeter is the sum of the lengths of all the sides*)



f) Find the **perimeter** of the following figure. (Hint: *Perimeter is the sum of the lengths of all the sides*)



11. Perform the indicated operation:

a) $31.62 \times 7.4 =$ _____

b) $0.03 \times 0.0014 =$ _____

c) 22% of 300 = _____

d) 127% of 34.5 = _____

e) $12 \div 0.15 =$ _____

f) $63.8 \div 9.72 =$ _____ (round to 2 decimal place)

12. David went out for dinner and the total bill was \$52.75, including sales tax of \$3.70.

a) What was the bill before taxes?

b) He wants to leave a 20% tip on the bill before taxes. How much tip should he leave on the table?

c) What was the dollar amount he spent (including taxes and tip) that night for dinner?

Answers:

1. a) Proper Fraction

b) Improper Fraction

c) Zero

d) Undefined

2. a) $\frac{13}{4}$

b) $\frac{1013}{100}$

c) $\frac{101}{9}$

d) $\frac{217}{30}$

3. a) $3\frac{1}{3}$

b) $1001\frac{2}{9}$

c) $1\frac{5}{7}$

d) $14\frac{4}{5}$

4. a) $\frac{1}{12}$

b) $2\frac{1}{2}$

c) 6

d) 444

5. a) $22\frac{2}{9}$

b) $4\frac{5}{8}$

c) $14\frac{5}{24}$

d) $17\frac{1}{4}$

e) 4

f) $7\frac{73}{81}$

g) $3\frac{2}{3}$

h) $47\frac{1}{27}$

6. a) $6\frac{5}{12}$

b) $27\frac{3}{5}$

c) $29\frac{7}{9}$

d) $24\frac{17}{27}$

e) $2\frac{5}{16}$

f) $\frac{1}{2}$

g) $11\frac{19}{25}$

h) $10\frac{1}{3}$

7.

a) $20\frac{2}{3}$

b) $36\frac{3}{4}$

c) 28

d) $37\frac{1}{16}$

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

f) $1\frac{13}{15}$

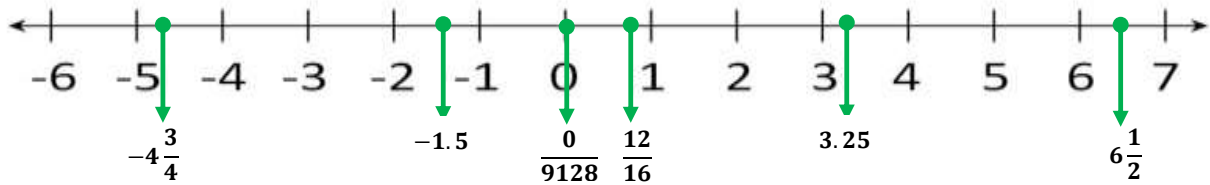
g) $\frac{29}{30}$

h) $5\frac{13}{14}$

8.

<i>Fraction</i>	<i>Decimal</i>	<i>Percentage</i>
a) $\frac{1}{2}$	b) 0.5	c) 50%
d) $\frac{1}{20}$	e) 0.05	f) 5%
g) $\frac{33}{50}$	h) 0.66	i) 66%
j) $\frac{2}{25}$	k) 0.08	l) 8%
m) $1\frac{11}{100}$	n) 1.11	o) 111%
p) $\frac{2}{5}$	q) 0.4	r) 40%

9.



10.

a) 42.28

b) 361.074

c) -44.38

d) 8.238

e) 8.49

f) 22.875

11.

a) 233.988

b) 0.000042

c) 66

d) 43.815

e) 80

f) 6.56

12.

a) \$49.05

b) \$9.81

c) \$62.56

Detailed Solutions to the Advanced Fraction Problems

- 1 a) $\frac{5}{112}$ ← denominator is larger hence Proper Fraction
 b) $\frac{2037}{1000}$ ← numerator is larger hence Improper Fraction
 c) $\frac{0}{98}$ ← numerator is zero hence the fraction is zero
 d) $\frac{2}{0}$ ← denominator is zero hence the fraction is undefined

2 a) $3\frac{1}{4} = \frac{(3 \times 4) + 1}{4} = \frac{12 + 1}{4} = \boxed{\frac{13}{4}}$

b) $10\frac{13}{100} = \frac{(10 \times 100) + 13}{100} = \frac{1000 + 13}{100} = \boxed{\frac{1013}{100}}$

c) $11\frac{2}{9} = \frac{(11 \times 9) + 2}{9} = \frac{99 + 2}{9} = \boxed{\frac{101}{9}}$

d) $7\frac{7}{30} = \frac{(7 \times 30) + 7}{30} = \frac{210 + 7}{30} = \boxed{\frac{217}{30}}$

3 a) $\frac{10}{3} \quad 3 \overline{)10} \begin{array}{r} 3 \\ -9 \\ \hline 1 \end{array} \rightarrow 3 \text{ wholes and } \frac{1}{3} = \boxed{3\frac{1}{3}}$
 1 ← Remainder

b) $\frac{9011}{9} \quad 9 \overline{)9011} \begin{array}{r} 1001 \\ -9 \downarrow \downarrow \downarrow \\ \hline 0011 \\ -9 \\ \hline 2 \end{array} \rightarrow 1001 \text{ wholes and } \frac{2}{9} = \boxed{1001\frac{2}{9}}$
 2 ← Remainder

3c) $\frac{12}{7}$ $7 \overline{) 12}$ → 1 whole and $\frac{5}{7} = \boxed{1 \frac{5}{7}}$
 $\frac{5}{7} \leftarrow$ Remainder

3d) $\frac{222}{15}$ $15 \overline{) 222}$ → 14 whole and $\frac{12}{15} = 14 \frac{12 \div 3}{15 \div 3} = \boxed{14 \frac{4}{5}}$
 ↑ Reduce fraction
 ↑ Top heavy

4a) $\frac{3 \div 3}{36 \div 3} = \boxed{\frac{1}{12}}$

b) $\frac{50 \div 10}{20 \div 2} = \frac{5}{2}$ $2 \overline{) 5}$ → $\boxed{2 \frac{1}{2}}$

c) $\frac{66 \div 11}{11 \div 11} = \frac{6}{1} = \boxed{6}$

d) $\frac{2220 \div 5}{5 \div 5} = \frac{444}{1} = \boxed{444}$

5a) $3 \frac{1}{3} \times 6 \frac{2}{3}$
 Converting to improper fraction we get $\boxed{22 \frac{2}{9}}$
 $\frac{10}{3} \times \frac{20}{3} = \frac{10 \times 20}{3 \times 3} = \frac{200}{9}$ Reduce to mixed number

$9 \overline{) 200}$
 $-18 \downarrow$
 $\frac{20}{-18}$
 $\frac{2}{-}$

5b) $9 \frac{1}{4} \times \frac{1}{2}$
 Converting mixed number to improper fraction we get $\boxed{4 \frac{5}{8}}$
 $\frac{37}{4} \times \frac{1}{2} = \frac{37 \times 1}{4 \times 2} = \frac{37}{8}$ change to mixed number

$8 \overline{) 37}$
 -32
 $\frac{5}{-}$

5c) $5 \frac{1}{6} \times 2 \frac{3}{4}$
 Changing mixed numbers to improper fractions we get $\boxed{14 \frac{5}{24}}$
 $\frac{31}{6} \times \frac{11}{4} = \frac{31 \times 11}{6 \times 4} = \frac{341}{24}$ change to mixed number

$24 \overline{) 341}$
 $-24 \downarrow$
 $\frac{101}{-96}$
 $\frac{5}{-}$

$$5d) 11\frac{1}{2} \times \frac{3}{2}$$

changing mixed number to improper fraction we get

$$\frac{23}{2} \times \frac{3}{2} = \frac{23 \times 3}{2 \times 2} = \frac{69}{4} \xrightarrow[\text{to mixed numbers}]{\text{change}} \boxed{17\frac{1}{4}}$$

$$\begin{array}{r} 17 \\ 4 \overline{) 69} \\ \underline{-44} \\ 29 \\ \underline{-28} \\ 1 \end{array}$$

$$5e) 5\frac{1}{3} \div 1\frac{1}{3}$$

changing mixed numbers to improper fraction we get

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

(Note: "Reciprocals" is written above the 3 in the second fraction, and "change to x" is written below the multiplication sign.)

$$5f) 7\frac{1}{9} \div \frac{9}{10}$$

changing mixed number to improper fraction we get

$$\frac{64}{9} \div \frac{9}{10} = \frac{64}{9} \times \frac{10}{9} = \frac{64 \times 10}{9 \times 9} = \frac{640}{81} \xrightarrow[\text{to mixed numbers}]{\text{change}} \boxed{7\frac{73}{81}}$$

$$\begin{array}{r} 7 \\ 81 \overline{) 640} \\ \underline{-567} \\ 73 \end{array}$$

$$5g) 2\frac{9}{12} \div \frac{3}{4}$$

changing mixed number to improper fraction we get

$$\frac{33}{12} \div \frac{3}{4} = \frac{33}{12} \times \frac{4}{3} = \frac{11 \times 1}{3 \times 1} = \frac{11}{3} \xrightarrow[\text{to mixed numbers}]{\text{change}} \boxed{3\frac{2}{3}}$$

$$\begin{array}{r} 3 \\ 3 \overline{) 11} \\ \underline{-9} \\ 2 \end{array}$$

$$5h) 7\frac{1}{18} \div \frac{3}{20}$$

changing the mixed numbers to improper fractions we get

$$\frac{127}{18} \div \frac{3}{20} = \frac{127}{\cancel{18}^9} \times \frac{\cancel{20}^{10}}{3} = \frac{1270}{27}$$

$$= \boxed{47\frac{1}{27}}$$

$$\begin{array}{r} 47 \\ 27 \overline{)1270} \\ \underline{-108} \\ 190 \\ \underline{-189} \\ 1 \end{array}$$

$$6a) 5\frac{1}{24} + 1\frac{9}{24}$$

Rewrite

$$\begin{array}{r} 5\frac{1}{24} \\ + 1\frac{9}{24} \\ \hline 6\frac{\cancel{10}^5}{\cancel{24}^{12}} = \boxed{6\frac{5}{12}} \end{array}$$

Alternately,
Converting mixed numbers to improper fractions we get

$$\frac{121}{24} + \frac{33}{24} = \frac{121+33}{24} = \frac{154}{24} = \frac{77}{12}$$

$$= \boxed{6\frac{5}{12}}$$

$$\begin{array}{r} 6 \\ 12 \overline{)77} \\ \underline{-72} \\ 5 \end{array}$$

$$6b) 6\frac{2}{5} + 21\frac{1}{5}$$

Rewrite

$$\begin{array}{r} 6\frac{2}{5} \\ + 21\frac{1}{5} \\ \hline \boxed{27\frac{3}{5}} \end{array}$$

Alternately
Converting mixed numbers to improper fractions we get

$$\frac{32}{5} + \frac{106}{5} = \frac{32+106}{5} = \frac{138}{5}$$

$$= \boxed{27\frac{3}{5}}$$

$$\begin{array}{r} 27 \\ 5 \overline{)138} \\ \underline{-10} \\ 38 \\ \underline{-35} \\ 3 \end{array}$$

$$6c) 27 \frac{4}{9} + 2 \frac{1}{3}$$

Rewrite

$$\begin{array}{r} 27 \frac{4}{9} \\ + 2 \frac{1 \cdot 3}{3 \cdot 3} \\ \hline 29 \frac{7}{9} \end{array}$$

Alternately,
Converting mixed numbers to
improper fractions we get

$$\begin{array}{r} \frac{247}{9} + \frac{7 \cdot 3}{3 \cdot 3} = \frac{247}{9} + \frac{21}{9} \\ \hline = \frac{247+21}{9} = \frac{268}{9} \\ = 29 \frac{7}{9} \end{array}$$

$$6d) 13 \frac{1}{3} + 11 \frac{8}{27}$$

Rewrite

$$\begin{array}{r} 13 \frac{1 \cdot 9}{3 \cdot 9} = 13 \frac{9}{27} \\ + 11 \frac{8}{27} \\ \hline 24 \frac{17}{27} \end{array}$$

Alternately
Converting mixed numbers to
improper fractions we get

$$\begin{array}{r} \frac{40 \cdot 9}{3 \cdot 9} + \frac{305}{27} = \frac{360}{27} + \frac{305}{27} \\ \hline = \frac{360+305}{27} \\ = \frac{665}{27} \\ = 24 \frac{17}{27} \end{array}$$

$$6e) 8 \frac{3}{4} - 6 \frac{7}{16}$$

Rewrite

$$\begin{array}{r} 8 \frac{3 \cdot 4}{4 \cdot 4} = 8 \frac{12}{16} \\ - 6 \frac{7}{16} \\ \hline 2 \frac{5}{16} \\ = 2 \frac{5}{16} \end{array}$$

Alternately
Converting mixed numbers
to improper fractions we
get

$$\begin{array}{r} \frac{35 \cdot 4}{4 \cdot 4} - \frac{103}{16} = \frac{140}{16} - \frac{103}{16} \\ \hline = \frac{37}{16} \\ = 2 \frac{5}{16} \end{array}$$

$$6f) 1\frac{5}{8} - 1\frac{1}{8}$$

Rewrite

$$\begin{array}{r} 1\frac{5}{8} \\ - 1\frac{1}{8} \\ \hline 0\frac{4}{8} \\ = \boxed{1\frac{1}{2}} \end{array}$$

Alternately
Converting mixed numbers to
improper fractions we get

$$\begin{aligned} \frac{13}{8} - \frac{9}{8} &= \frac{13-9}{8} \\ &= \frac{4}{8} \\ &= \boxed{\frac{1}{2}} \end{aligned}$$

$$6g) 12\frac{4}{5} - 1\frac{1}{25}$$

Rewrite

$$\begin{array}{r} 12\frac{4 \cdot 5}{5 \cdot 5} = 12\frac{20}{25} \\ - 1\frac{1}{25} \\ \hline 11\frac{19}{25} \end{array}$$

Alternately
Converting mixed numbers to
improper fractions we get

$$\begin{aligned} \frac{645}{5 \cdot 5} - \frac{26}{25} &= \frac{320}{25} - \frac{26}{25} \Big| \begin{array}{r} 11 \\ 25 \overline{) 294} \\ -25 \\ \hline 44 \end{array} \\ &= \frac{320-26}{25} = \frac{294}{25} \Big| \begin{array}{r} 11 \\ 25 \overline{) 294} \\ -25 \\ \hline 19 \end{array} \\ &= \boxed{11\frac{19}{25}} \end{aligned}$$

$$6h) 30\frac{4}{7} - 20\frac{5}{21}$$

Rewrite

$$\begin{array}{r} 30\frac{4 \cdot 3}{7 \cdot 3} = 30\frac{12}{21} \\ - 20\frac{5}{21} \\ \hline 10\frac{7}{21} \\ = \boxed{10\frac{1}{3}} \end{array}$$

Alternately
Converting mixed numbers to
improper fractions we get

$$\begin{aligned} \frac{214 \cdot 3}{7 \cdot 3} - \frac{425}{21} &= \frac{642}{21} - \frac{425}{21} \Big| \begin{array}{r} 10 \\ 21 \overline{) 217} \\ -21 \\ \hline 07 \end{array} \\ &= \frac{217}{21} \\ &= 10\frac{7}{21} \\ &= \boxed{10\frac{1}{3}} \end{aligned}$$

$$7a) 12 \frac{8}{9} + 7 \frac{7}{9}$$

Rewrite

$$\begin{array}{r} 12 \frac{8}{9} \\ + 7 \frac{7}{9} \\ \hline \end{array}$$

$$19 \frac{5+7}{9} \text{ - has a whole}$$

$$\text{now } \frac{5}{3} = 1 \frac{2}{3}$$

$$\begin{array}{l} \text{hence (Regrouping)} \\ 19 \frac{5}{3} = 19 + 1 \frac{2}{3} \\ = \boxed{20 \frac{2}{3}} \end{array}$$

Alternately
Converting the mixed numbers
to improper fraction we get-

$$\frac{115}{9} + \frac{70}{9} = \frac{115+70}{9}$$

$$= \frac{185}{9}$$

$$= 20 \frac{5}{9}$$

$$= \boxed{20 \frac{2}{3}}$$

$$\begin{array}{r} 20 \\ 9 \overline{)185} \\ \underline{-18} \\ 05 \end{array}$$

$$7b) 15 \frac{41}{44} + 20 \frac{9}{11}$$

Rewrite

$$\begin{array}{r} 15 \frac{41}{44} \\ + 20 \frac{9 \cdot 4}{11 \cdot 4} \\ \hline 35 \frac{77}{44} \end{array}$$

$$\text{now } \frac{7}{4} = 1 \frac{3}{4}$$

$$\begin{array}{l} \text{hence by regrouping} \\ 35 \frac{7}{4} = 35 + 1 \frac{3}{4} = \boxed{36 \frac{3}{4}} \end{array}$$

Alternately
Converting the mixed numbers
to improper fraction we get

$$\frac{701}{44} + \frac{229 \cdot 4}{11 \cdot 4} = \frac{701}{44} + \frac{916}{44}$$

$$= \frac{1617}{44}$$

$$= 36 \frac{33}{44}$$

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

$$\begin{array}{r} 36 \\ 44 \overline{)1617} \\ \underline{-132} \\ 297 \\ \underline{-264} \\ 33 \end{array}$$

$$7c) 6 \frac{4}{5} + 21 \frac{1}{5}$$

Rewrite

$$\begin{array}{r} 6 \frac{4}{5} \\ + 21 \frac{1}{5} \\ \hline \end{array}$$

$$= 27 \frac{5}{5} \} 1 \text{ whole}$$

$$= \boxed{28} \text{ by regrouping}$$

Alternately
Converting the mixed numbers
to improper fractions we get

$$\frac{34}{5} + \frac{106}{5} = \frac{34+106}{5}$$

$$= \frac{140}{5} = 28$$

$$= \boxed{28}$$

$$7d) 17 \frac{15}{16} + 19 \frac{1}{8}$$

Rewrite

$$\begin{array}{r} 17 \frac{15}{16} \\ + 19 \frac{1 \cdot 2}{8 \cdot 2} \\ \hline \end{array} = \begin{array}{r} 17 \frac{15}{16} \\ + 19 \frac{2}{16} \\ \hline 36 \frac{17}{16} \end{array}$$

$$\text{now } \frac{17}{16} = 1 \frac{1}{16}$$

hence by regrouping

$$36 \frac{17}{16} = 36 + 1 \frac{1}{16} = \boxed{37 \frac{1}{16}}$$

Alternately
Converting the mixed numbers
to improper fractions we get

$$\frac{287}{16} + \frac{153}{8 \cdot 2} = \frac{287+306}{16}$$

$$= \frac{593}{16}$$

$$= \boxed{37 \frac{1}{16}}$$

$$\begin{array}{r} 37 \\ 16 \overline{) 593} \\ \underline{-48} \\ 113 \\ \underline{-112} \\ 1 \end{array}$$

$$7e) 33 \frac{1}{24} - 31 \frac{8}{12}$$

Rewrite

$$\begin{array}{r} 33 \frac{1}{24} \\ - 31 \frac{8 \cdot 2}{12 \cdot 2} \\ \hline \end{array} = \begin{array}{r} 33 \frac{1}{24} + \frac{24}{24} \\ - 31 \frac{16}{24} \\ \hline \end{array} \leftarrow \begin{array}{l} \text{bigger} \\ \text{hence} \\ \text{regrouping} \end{array}$$

$$= 32 \frac{25}{24}$$

$$- 31 \frac{16}{24}$$

$$\hline 1 \frac{9}{24} = \boxed{1 \frac{3}{8}}$$

Alternately
Converting mixed numbers
to improper fractions we get

$$\frac{793}{24} - \frac{380 \cdot 2}{12 \cdot 2} = \frac{793-760}{24}$$

$$= \frac{33}{24}$$

$$= \boxed{1 \frac{3}{8}}$$

$$7f) 8 \frac{2}{3} - 6 \frac{12}{15}$$

Rewrite

$$8 \frac{2 \cdot 5}{3 \cdot 5} = 8 \frac{10}{15} + \frac{15}{15}$$

$$- 6 \frac{12}{15} \quad - 6 \frac{12}{15} \leftarrow \text{bigger}$$

hence regrouping we get

$$\begin{array}{r} 7 \frac{25}{15} \\ - 6 \frac{12}{15} \\ \hline \boxed{1 \frac{13}{15}} \end{array}$$

Alternately
Converting mixed numbers to
improper fractions we get

$$\frac{26.5}{3.5} - \frac{102}{15} = \frac{130}{15} - \frac{102}{15}$$

$$= \frac{130 - 102}{15} = \frac{28}{15}$$

$$= \boxed{1 \frac{13}{15}} \quad \begin{array}{r} 1 \\ 15 \overline{) 28} \\ \underline{15} \\ 13 \end{array}$$

$$7g) 1 \frac{1}{30} - \frac{1}{15}$$

Rewrite

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

$$- 0 \frac{1 \cdot 2}{15 \cdot 2} \quad - 0 \frac{2}{30} \leftarrow \text{bigger}$$

hence regrouping we get

$$\begin{array}{r} 31 \\ 30 \\ - 2 \\ 30 \\ \hline \boxed{\frac{29}{30}} \end{array}$$

Alternately
Converting mixed number to
improper fractions we get

$$\frac{31}{30} - \frac{1 \cdot 2}{15 \cdot 2} = \frac{31}{30} - \frac{2}{30}$$

$$= \boxed{\frac{29}{30}}$$

$$7h) 9\frac{6}{7} - 3\frac{13}{14}$$

Rewrite

$$9\frac{6 \cdot 2}{7 \cdot 2} = 8\frac{12 + \frac{14}{14}}{14} - 3\frac{13}{14} = 8\frac{13 \leftarrow \text{bigger}}{14} - 3\frac{13}{14}$$

hence regrouping we get

$$\begin{array}{r} 8\frac{26}{14} \\ - 3\frac{13}{14} \\ \hline \end{array}$$

$$\boxed{5\frac{13}{14}}$$

Alternately
Converting mixed numbers to
improper fractions we get

$$\frac{69 \cdot 2}{7 \cdot 2} - \frac{55}{14}$$

$$= \frac{138}{14} - \frac{55}{14}$$

$$= \frac{83}{14}$$

$$= \boxed{5\frac{13}{14}}$$

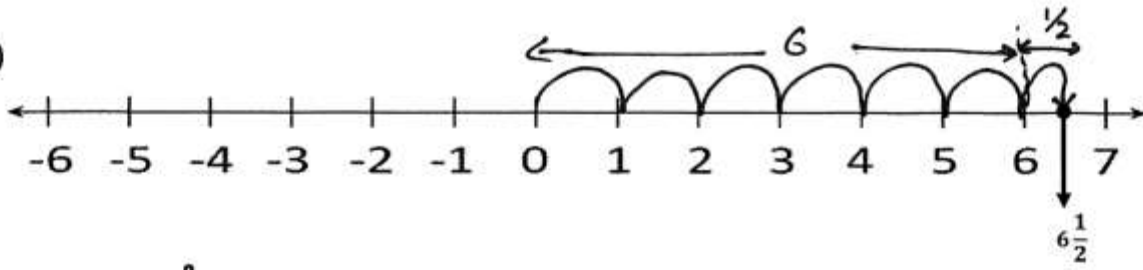
$$\begin{array}{r} 14 \overline{) 83} \\ \underline{70} \\ 13 \end{array}$$

8. Fill in the missing parts:

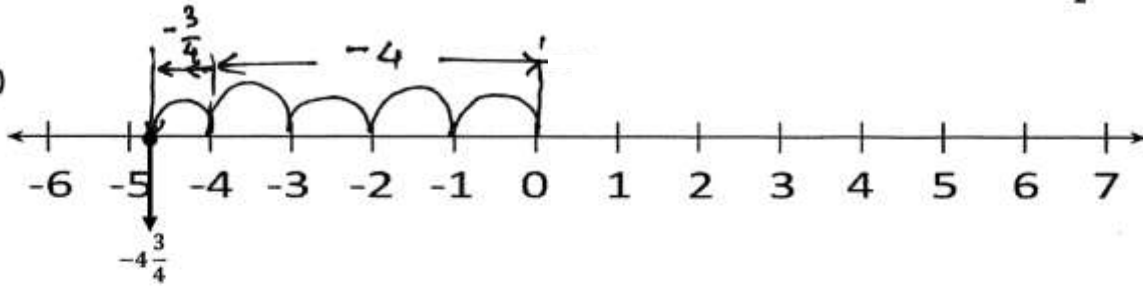
Fraction	Decimal	Percentage
a) $\frac{1}{2}$	b) $\boxed{0.5}$ $\begin{array}{r} 25 \overline{) 1.0} \\ \underline{-10} \\ 0 \end{array}$	c) $\frac{1}{2} = 0.50 = \boxed{50\%}$
d) $0.05 = \frac{5 \div 5}{100 \div 5} = \boxed{\frac{1}{20}}$	e) 0.05	f) $0.05 = \boxed{5\%}$
g) $66\% = \frac{66 \div 2}{100 \div 2} = \boxed{\frac{33}{50}}$	h) $66\% = \frac{66}{100} = \boxed{0.66}$	i) 66%
j) $0.08 = \frac{8 \div 4}{100 \div 4} = \boxed{\frac{2}{25}}$	k) 0.08	l) $0.08 = \boxed{8\%}$
m) $111\% = \frac{111}{100} = \boxed{1\frac{11}{100}}$	n) $111\% = \frac{111}{100} = \boxed{1.11}$	o) 111%
p) $\frac{2}{5}$	q) $\boxed{0.4}$ $\begin{array}{r} 5 \overline{) 2.0} \\ \underline{-20} \\ 0 \end{array}$	r) $\frac{2}{5} = 0.40 = \boxed{40\%}$

9.

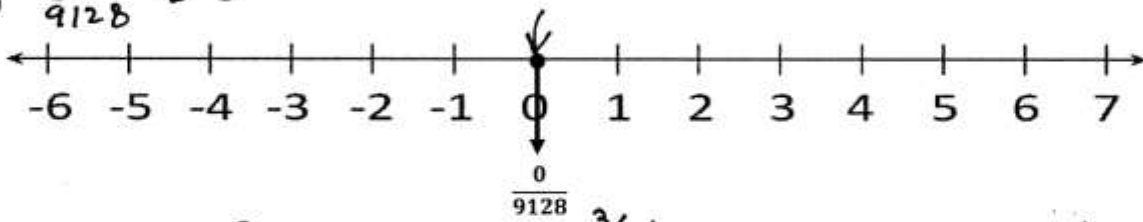
a)



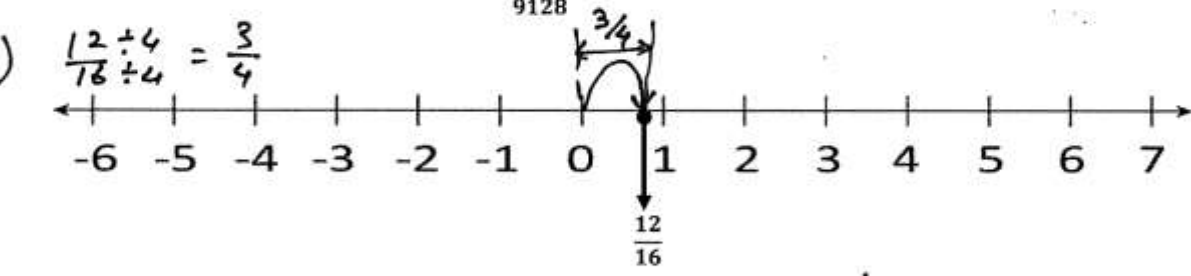
b)



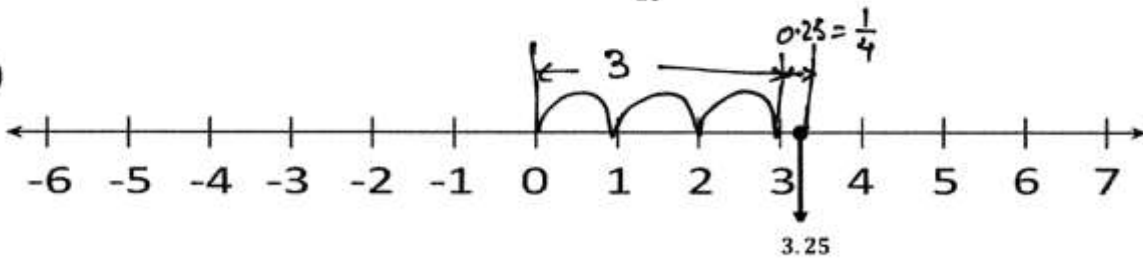
c) $\frac{0}{9128} = 0$



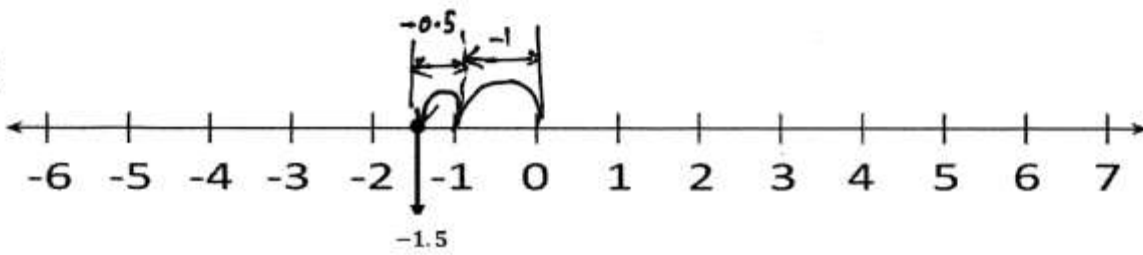
d) $\frac{12 \div 4}{18 \div 4} = \frac{3}{4}$



e)



f)



10 a) $32.68 + 9.6$

Rewrite

$$\begin{array}{r} \overset{1}{3} \overset{1}{2} . 68 \\ + 09 . 60 \\ \hline \boxed{42.28} \end{array}$$

b) $12.324 + 348.75$

Rewrite

$$\begin{array}{r} \overset{1}{0} \overset{1}{1} 2 . 324 \\ + 348 . 750 \\ \hline \boxed{361.074} \end{array}$$

c) $34.12 - 78.5$

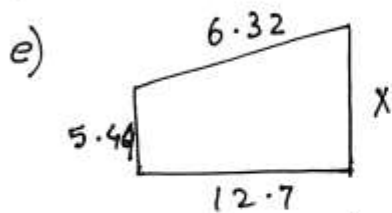
bigger

$$\begin{array}{r} 78.510 \\ - 34.12 \\ \hline \boxed{-44.38} \end{array}$$

d) $17.67 - 9.432$

Rewrite

$$\begin{array}{r} 17.6\overset{6}{7}10 \\ - 09.432 \\ \hline \boxed{8.238} \end{array}$$



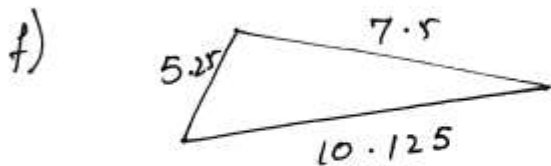
Perimeter = sum of sides

$$33 = 6.32 + 5.49 + 12.7 + X$$

$$\begin{array}{r} 33 = 24.51 + X \\ - 24.51 \quad - 24.51 \\ \hline \boxed{8.49 = X} \end{array}$$

$$\begin{array}{r} 111 \\ 06.32 \\ 05.49 \\ 12.70 \\ \hline 24.51 \end{array}$$

$$\begin{array}{r} 2\overset{12}{3}\overset{9}{8} . 1010 \\ 24.51 \\ \hline 8.49 \end{array}$$



Perimeter = sum of all sides

$$\begin{aligned} P &= 5.25 + 7.5 + 10.125 \\ &= \boxed{22.875} \end{aligned}$$

$$\begin{array}{r} \overset{1}{0} 5.250 \\ 07.500 \\ + 10.125 \\ \hline 22.875 \end{array}$$

11 a) 31.62×7.4
 Multiplying without the
 decimals we get

$$\begin{array}{r} 3162 \\ \times 74 \\ \hline 12648 \\ + 221340 \\ \hline 233988 \end{array}$$

There are 3 decimal places hence

$$233988$$

Therefore $\boxed{233.988}$

c) 22% of 300

$$22\% = \frac{22}{100} = 0.22$$

$$\text{so } 0.22 \times 300$$

$$= 66.00$$

$$= \boxed{66}$$

e) $12 \div 0.15$

$$= \frac{1200}{0.15}$$

$$= \frac{1200 \times 240}{153}$$

$$= \boxed{80}$$

b) 0.03×0.0014
 Multiplying without
 the decimals we get

$$3 \times 14 = 42$$

There are 6 decimal
 places hence

$$0.000042$$

Therefore

$$\boxed{0.000042}$$

d) 127% of 34.5

$$127\% = \frac{127}{100} = 1.27$$

$$\text{so } 1.27 \times 34.5$$

$$= 43.815$$

$$= \boxed{43.815}$$

f) $63.8 \div 9.72$

$$= \frac{6380}{972}$$

$$= \frac{6380}{972} \times 1595$$

$$= \frac{1595}{243}$$

$$\approx \boxed{6.56}$$

$$\begin{array}{r} 6.563 \\ 243 \overline{) 1595.000} \\ \underline{-1458} \\ 1370 \\ \underline{-1215} \\ 1550 \\ \underline{-1458} \\ 920 \\ \underline{-729} \\ 191 \end{array}$$

$$12 \text{ a) Bill before taxes} = 52.75 - 3.70 \\ = \boxed{\$49.05}$$

$$\text{b) } 20\% \text{ of } \$49.05 \\ = 0.2 \times 49.05 \\ = \boxed{\$9.81}$$

$$\text{c) Total spend} = \$52.75 + \$9.81 \\ = \boxed{\$62.56}$$

Additional Resources

1. Go To <http://www.onlinemathlearning.com/math-worksheets.html>
2. Click on the link which says Fractions on the “**Fractions Worksheet**” tile
3. Select any skill in the tiles provided to practice.
4. These are free online worksheets and once you answer them you click on the “submit” button to check answers.
5. Continue with other skills till you have satisfactorily mastered the skills
6. For further help please contact the [Math Assistance Area](#).