Worksheet 13 Memorandum: Common Fractions

Grade 8 Mathematics

1. Convert these mixed number fractions to improper fractions:

a) $2\frac{19}{25} = \frac{69}{25}$ b) $1\frac{3}{7} = \frac{10}{7}$ c) $2\frac{6}{9} = \frac{24}{9}$

d) $3\frac{1}{3} = \frac{10}{3}$ e) $1\frac{2}{5} = \frac{7}{5}$ f) $8\frac{3}{4} = \frac{35}{4}$

g) $9\frac{11}{12} = \frac{119}{12}$ h) $7\frac{3}{8} = \frac{59}{8}$ i) $4\frac{1}{6} = \frac{25}{6}$

j) $3\frac{2}{6} = \frac{20}{6}$ k) $4\frac{10}{12} = \frac{58}{12}$ l) $7\frac{3}{10} = \frac{73}{10}$

2. Convert these improper fractions to mixed number fractions:

a) $\frac{18}{15} = 1\frac{1}{5}$ b) $\frac{89}{7} = 12\frac{5}{7}$ c) $\frac{27}{11} = 2\frac{5}{11}$

d) $\frac{53}{5} = 10\frac{3}{5}$ e) $\frac{44}{3} = 14\frac{2}{3}$ f) $\frac{70}{30} = 2\frac{1}{3}$

g) $\frac{61}{6} = 10\frac{1}{6}$ h) $\frac{93}{7} = 13\frac{2}{7}$ i) $\frac{60}{8} = 7\frac{1}{2}$

j) $\frac{68}{3} = 22\frac{2}{3}$ k) $\frac{328}{25} = 13\frac{3}{25}$ l) $\frac{9933}{1000} = 9\frac{933}{1000}$

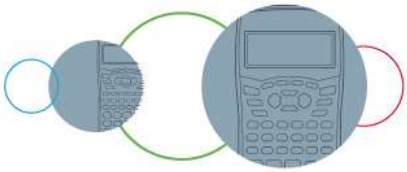
3. Find the simplest form of these fractions:

a) $\frac{77}{22} = \frac{7}{2}$ *or* $3\frac{1}{2}$ b) $\frac{8}{4} = 2$ c) $\frac{16}{24} = \frac{2}{3}$

d) $\frac{81}{90} = \frac{9}{10}$ e) $\frac{36}{42} = \frac{6}{7}$ f) $\frac{45}{60} = \frac{3}{4}$

g) $\frac{11}{121} = \frac{1}{11}$ h) $\frac{30}{90} = \frac{1}{3}$ i) $\frac{25}{100} = \frac{1}{4}$

j) $\frac{21}{42} = \frac{1}{2}$ k) $\frac{100}{250} = \frac{2}{5}$ l) $\frac{93}{96} = \frac{31}{32}$



4. Complete the following table by filling in the missing values:

Common Fraction in Simplest Form	Percentage	Decimal
$\frac{5}{3}$	166,67%	1.66ė
$\frac{9}{10}$	90%	0,9
$\frac{1}{100}$	1%	0.01
$\frac{11}{12}$	91,67%	0,9166ė
$\frac{3}{4}$	75%	0,75
$2\frac{1}{2}$	250%	2.5
$\frac{11}{40}$	27,5%	0,275
$\frac{21}{100}$	21%	0,21
$\frac{1}{8}$	12,5%	0.125

5. Find the following. (Show all your steps and give in simplest form):

a) $\frac{9}{10}\ of\ 8$

$= \frac{9}{10} \times \frac{8}{1}$

$= \frac{9}{5} \times \frac{4}{1}$

$= \frac{36}{5}\ or\ 7\frac{1}{5}$

b) $\frac{6}{8}\ of\ 30$

$= \frac{6}{8} \times \frac{30}{1}$

$= \frac{3}{2} \times \frac{15}{1}$

$= \frac{45}{2}\ or\ 22\frac{1}{2}$

c) $\frac{9}{8}\ of\ 64$

$= \frac{9}{8} \times \frac{64}{1}$

$= \frac{9}{1} \times \frac{8}{1}$

$= 72$

d) $\frac{1}{4}\ of\ 42$

$= \frac{1}{4} \times \frac{42}{1}$

$= \frac{1}{2} \times \frac{21}{1}$

$= \frac{21}{2}\ or\ 10\frac{1}{2}$

e) $\frac{5}{9}\ of\ 19$

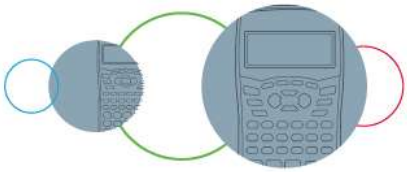
$= \frac{5}{9} \times \frac{19}{1}$

$= \frac{95}{9}\ or\ 10\frac{5}{9}$

f) $\frac{1}{3} of\ \frac{4}{5}$

$= \frac{1}{3} \times \frac{4}{5}$

$= \frac{4}{15}$



g) $\frac{2}{5}\ of\ \frac{1}{5}$

$= \frac{2}{5} \times \frac{1}{5}$

$= \frac{2}{25}$

h) $\frac{4}{9}\ of\ \frac{1}{3}$

$= \frac{4}{9} \times \frac{1}{3}$

$= \frac{4}{27}$

i) $\frac{3}{6}\ of\ 47$

$= \frac{3}{6} \times \frac{47}{1}$

$= \frac{141}{6}\ or\ 23\frac{1}{2}$

j) $\frac{2}{7}\ of\ \frac{1}{6}$

$= \frac{2}{7} \times \frac{1}{6}$

$= \frac{1}{7} \times \frac{1}{3}$

$= \frac{1}{21}$

k) $\frac{3}{8}\ of\ \frac{4}{9}$

$= \frac{3}{8} \times \frac{4}{9}$

$= \frac{1}{2} \times \frac{1}{3}$

$= \frac{1}{6}$

l) $2\frac{1}{3}\ of\ 93$

$= \frac{7}{3} \times \frac{93}{1}$

$= \frac{7}{1} \times \frac{31}{1}$

$= 217$

6. Find the answers to the following. Give your answers in simplest fraction form and show all your working out:

a) $\frac{3}{6} + \frac{4}{5}$

$= \frac{15}{30} + \frac{24}{30}$

$= \frac{39}{30}$

$= \frac{13}{10}\ \ or\ 1\frac{3}{10}$

b) $9\frac{2}{7} - 2\frac{1}{2}$

$= 9\frac{4}{14} - 2\frac{7}{14}$

$= 8\frac{18}{14} - 2\frac{7}{14}$

$= 6\frac{11}{14}$

c) $\frac{3}{7} \times \frac{1}{9}$

$= \frac{1}{7} \times \frac{1}{3}$

$= \frac{1}{21}$

d) $1\frac{9}{15} + 1\frac{2}{3} - 2\frac{3}{5}$

$= 1\frac{9}{15} + 1\frac{10}{15} - 2\frac{9}{15}$

$= 2\frac{19}{15} - 2\frac{9}{15}$

$= \frac{10}{15}\ \ or\ \frac{2}{3}$

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

$= \frac{9}{4} \times \frac{17}{3}$

$= \frac{3}{4} \times \frac{17}{1}$

f) $2\frac{2}{9} - 1\frac{1}{6}$

$= 2\frac{4}{18} - 1\frac{3}{18}$

$= 1\frac{1}{18}$

g) $\frac{2}{7} + \frac{5}{8} - \frac{1}{4}$

$= \frac{16}{56} + \frac{35}{56} - \frac{14}{56}$

$= \frac{37}{56}$

h) $1\frac{3}{8} \times 1\frac{8}{11}$

$= \frac{11}{8} \times \frac{19}{11}$

$= \frac{1}{8} \times \frac{19}{1}$

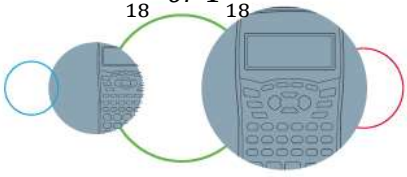
$= \frac{19}{8}\ or\ 2\frac{3}{8}$

i) $\frac{10}{9} + \frac{4}{3} - 1\frac{7}{18}$

$= \frac{20}{18} + \frac{24}{18} - 1\frac{7}{18}$

$= \frac{44}{18} - \frac{25}{18}$

$= \frac{19}{18}\ \ or\ 1\frac{1}{18}$



j) $9\frac{3}{4} \times \frac{12}{13}$

$= \frac{39}{4} \times \frac{12}{13}$

$= \frac{3}{1} \times \frac{3}{1}$

$= 9$

k) $\frac{6}{8} + 2\frac{1}{16} - 2\frac{5}{8}$

$= \frac{12}{16} + 2\frac{1}{16} - 2\frac{10}{16}$

$= 2\frac{13}{16} - 2\frac{10}{16}$

$= \frac{3}{16}$

l) $5\frac{4}{7} \times \frac{5}{3}$

$= \frac{39}{7} \times \frac{5}{3}$

$= \frac{13}{7} \times \frac{5}{1}$

$= \frac{65}{7}$ *or* $9\frac{2}{7}$

7. Divide the following and write your answer in simplest form:

a) $3 \div \frac{1}{2}$

$= \frac{3}{1} \div \frac{1}{2}$

$= \frac{3}{1} \times \frac{2}{1}$

$= 6$

b) $5 \div \frac{4}{7}$

$= \frac{5}{1} \div \frac{4}{7}$

$= \frac{5}{1} \times \frac{7}{4}$

$= \frac{35}{4}$ *or* $8\frac{3}{4}$

c) $9 \div \frac{4}{6}$

$= \frac{9}{1} \div \frac{4}{6}$

$= \frac{9}{1} \times \frac{6}{4}$

$= \frac{54}{4}$ *or* $13\frac{1}{2}$

d) $9 \div \frac{9}{10}$

$= \frac{9}{1} \div \frac{9}{10}$

$= \frac{9}{1} \times \frac{10}{9}$

$= \frac{1}{1} \times \frac{10}{1}$

$= 10$

e) $8 \div \frac{4}{5}$

$= \frac{8}{1} \div \frac{4}{5}$

$= \frac{8}{1} \times \frac{5}{4}$

$= \frac{2}{1} \times \frac{5}{1}$

$= 10$

f) $\frac{1}{2} \div \frac{6}{7}$

$= \frac{1}{2} \times \frac{7}{6}$

$= \frac{7}{12}$

g) $\frac{28}{32} \div \frac{7}{8}$

$= \frac{28}{32} \times \frac{8}{7}$

$= \frac{4}{4} \times \frac{1}{1}$

$= 1$

h) $\frac{11}{7} \div \frac{121}{49}$

$= \frac{11}{7} \times \frac{49}{121}$

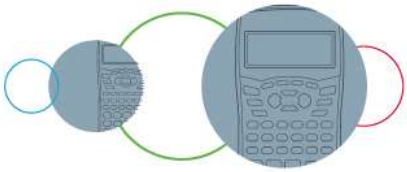
$= \frac{1}{1} \times \frac{7}{11}$

$= \frac{7}{11}$

i) $\frac{1}{5} \div \frac{3}{8}$

$= \frac{1}{5} \times \frac{8}{3}$

$= \frac{8}{15}$



j) $\frac{5}{8} \div \frac{5}{6}$

$= \frac{5}{8} \times \frac{6}{5}$

$= \frac{1}{4} \times \frac{3}{1}$

$= \frac{3}{4}$

k) $\frac{3}{7} \div \frac{9}{21}$

$= \frac{3}{7} \times \frac{21}{9}$

$= \frac{1}{1} \times \frac{3}{3}$

$= 1$

l) $\frac{8}{17} \div \frac{32}{34}$

$= \frac{8}{17} \times \frac{34}{32}$

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

$= \frac{1}{2}$

8. Find the answers for the following without using your calculator:

a) $\sqrt{\frac{25}{64}}$

$= \frac{5}{8}$

b) $\sqrt{\frac{36}{49}}$

$= \frac{6}{7}$

c) $\left(\frac{1}{4}\right)^2$

$= \frac{1}{16}$

d) $\left(2\frac{1}{3}\right)^3$

$= \left(\frac{7}{3}\right)^3$

$= \frac{343}{27}$ *or* $12\frac{19}{27}$

e) $\left(2\frac{2}{3}\right)^2$

$= \left(\frac{8}{3}\right)^2$

$= \frac{64}{9}$ *or* $9\frac{1}{9}$

f) $\sqrt[3]{\frac{8}{27}}$

$= \frac{2}{3}$

g) $\left(7\frac{1}{2}\right)^2$

$= \left(\frac{15}{2}\right)^2$

$= \frac{225}{4}$ *or* $56\frac{1}{4}$

h) $\sqrt{\frac{100}{121}}$

$= \frac{10}{11}$

i) $\sqrt[3]{\frac{1}{125}}$

$= \frac{1}{5}$

j) $\left(\frac{4}{5}\right)^3$

$= \frac{64}{125}$

k) $\left(\frac{1}{4}\right)^3$

$= \frac{1}{64}$

l) $\sqrt[3]{\frac{27}{64}}$

$= \frac{3}{4}$

9. Find the following without using your calculator:

a) 92% of 180

$= \frac{92}{100} \times \frac{180}{1}$

$= \frac{92}{5} \times \frac{9}{1}$

$= \frac{828}{5}$ *or* $165\frac{3}{5}$

b) 45% of 40

$= \frac{45}{100} \times \frac{40}{1}$

$= \frac{9}{1} \times \frac{2}{1}$

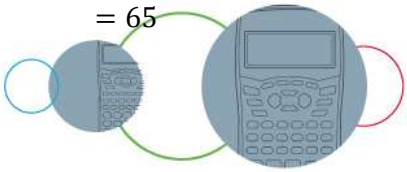
$= 18$

c) 50% of 130

$= \frac{50}{100} \times \frac{130}{1}$

$= \frac{1}{1} \times \frac{65}{1}$

$= 65$



d) 25% of 80

$= \frac{25}{100} \times \frac{80}{1}$

$= \frac{1}{1} \times \frac{20}{1}$

$= 20$

e) 65% of 5

$= \frac{65}{100} \times \frac{5}{1}$

$= \frac{13}{4} \times \frac{1}{1}$

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

f) 33% of 63

$= \frac{33}{100} \times \frac{63}{1}$

$= \frac{2079}{100}\ or\ 20{,}79$

g) 77% of 700

$= \frac{77}{100} \times \frac{700}{1}$

$= \frac{77}{1} \times \frac{7}{1}$

$= 539$

h) 70% of 36

$= \frac{70}{100} \times \frac{36}{1}$

$= \frac{7}{5} \times \frac{18}{1}$

$= \frac{126}{5}\ or\ 25\frac{1}{5}$

i) 20% of 420

$= \frac{20}{100} \times \frac{420}{1}$

$= \frac{1}{1} \times \frac{84}{1}$

$= 84$

j) 68% of 297

$= \frac{68}{100} \times \frac{297}{1}$

$= \frac{17}{25} \times \frac{297}{1}$

$= \frac{5049}{25}\ or\ 201\frac{24}{25}$

k) 120% of 2 268

$= \frac{120}{100} \times \frac{2268}{1}$

$= \frac{6}{5} \times \frac{2268}{1}$

$= \frac{13608}{5}\ or\ 2\ 721\frac{3}{5}$

l) 34% of 667

$= \frac{34}{100} \times \frac{667}{1}$

$= \frac{17}{50} \times \frac{667}{1}$

$= \frac{11339}{50}\ or\ 226\frac{39}{50}$

10. Give the percentage of each of the following (round off to two decimal places where necessary):

a) 400 out of 500

$= \frac{400}{500} \times 100$

$= 80\%$

b) 897 out of 950

$= \frac{897}{950} \times 100$

$= 94.42\%$

c) 61 out of 70

$= \frac{61}{70} \times 100$

$= 87{,}14\%$

d) 30 out of 45

$= \frac{30}{45} \times 100$

$= 66{,}67\%$

e) 63 out of 72

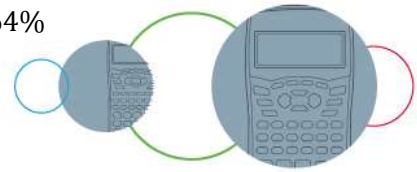
$= \frac{63}{72} \times 100$

$= 87{,}5\%$

f) 92 out of 110

$= \frac{92}{110} \times 100$

$= 83,64\%$



g) 46 out of 50

$= \frac{46}{50} \times 100$

$= 92\%$

h) 54 out of 80

$= \frac{54}{80} \times 100$

$= 67{,}5\%$

i) 278 out of 1 500

$= \frac{278}{1500} \times 100$

$= 18{,}53\%$

j) 67 out of 500

$= \frac{67}{500} \times 100$

$= 13{,}4\%$

11. Give the percentage increase or decrease for each of these pairs of values:

a) 63 to 72

$= \frac{72-63}{63} \times 100$

$= \frac{9}{63} \times 100$

$= \frac{1}{7} \times 100$

$= 14{,}29\%\ increase$

b) 24 to 48

$= \frac{48-24}{24} \times 100$

$= \frac{24}{24} \times 100$

$= 100\%$ increase

c) 65 to 90

$= \frac{90-65}{65} \times 100$

$= \frac{25}{65} \times 100$

$= \frac{5}{13} \times 100$

$= 38{,}46\%\ increase$

d) 19 to 21

$= \frac{21-19}{19} \times 100$

$= \frac{2}{19} \times 100$

$= 10{,}53\%\ increase$

e) 29 to 42

$= \frac{42-29}{29} \times 100$

$= \frac{13}{29} \times 100$

$= 44{,}83\%\ increase$

f) 99 to 100

$= \frac{100-99}{99} \times 100$

$= \frac{1}{99} \times 100$

$= 1{,}01\%\ increase$

g) 75 to 100

$= \frac{100-75}{75} \times 100$

$= \frac{25}{75} \times 100$

$= \frac{1}{3} \times 100$

$= 33{,}33\%$ increase

h) 64 to 108

$= \frac{108-64}{64} \times 100$

$= \frac{44}{64} \times 100$

$= \frac{11}{16} \times 100$

$= 68{,}75\%$ increase

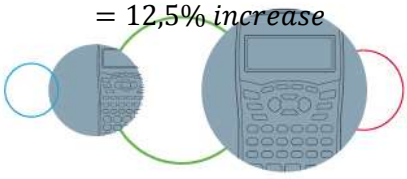
i) 32 to 36

$= \frac{36-32}{32} \times 100$

$= \frac{4}{32} \times 100$

$= \frac{1}{8} \times 100$

$= 12{,}5\%\ increase$



j) 90 to 86

$= \frac{90-86}{90} \times 100$

$= \frac{4}{90} \times 100$

$= \frac{2}{45} \times 100$

$= 4{,}44\%\ decrease$

k) 51 to 34

$= \frac{51-34}{51} \times 100$

$= \frac{17}{51} \times 100$

$= \frac{1}{3} \times 100$

$= 33{,}33\%\ decrease$

l) 64 to 56

$= \frac{64-56}{64} \times 100$

$= \frac{8}{64} \times 100$

$= \frac{1}{8} \times 100$

$= 12{,}5\%\ decrease$

12. Calculate the following:

a) 390 increased by 15%

= 448,5%

b) 412 decreased by 20%

= 329,6

c) 655 increased by 30%

= 851,5

d) 980 decreased by 60%

= 392

e) 1298 increased by 50%

= 1 947

f) 1 349 decreased by 45%

= 741, 95

g) 492 increased by 11%

= 546,12

h) 2 890 decreased by 12%

= 2 543,2

i) 5 890 increased by 17%

$= 6\,891{,}3$

j) 652 decreased by 92%

= 52,16

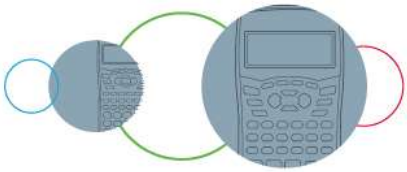
13. Work out the answers for the following word sums by showing all your working out and writing your answers in full sentences.

a) Suzy, Georgia and Bernadette do a project together. Suzy does $\frac{5}{18}$ of the project, Georgia does $\frac{2}{9}$ of the project and Bernadette does $\frac{1}{2}$ of the project.

i) How much of the project still needs to be completed?

$= \frac{18}{18} - \frac{5}{18}(Suzy) - \frac{4}{18}(Georgia) - \frac{9}{18}\ (Bernadette)$

$= 0$



ii) Who do you think should do the last section of the project? Give a reason for your answer.

There is no part of the project left to do.

b) Bob's bling and bits is having a sale. Items in Category A are marked down by 25% and items in Category B are marked down by 45%. Find the prices for each of these items:

Bling Necklace – original price = R195 Bling Ring – original price = R340

Bling Scarf – original price = R95 Earrings – original price = R120.

i) if they are in category A

Bling necklace = 195 – 25% = R146,25

Bling Ring = R340 – 25% = R255

Bling Scarf = R95 – 25% = R71,25

Earrings = R120 – 25% = R90

ii) if they are in category B.

Bling necklace = 195 – 45% = R107,25

Bling Ring = R340 – 45% = R187

Bling Scarf = R95 – 45% = R52,25

Earrings = R120 – 45% = R66

c) Sipho buys a car for R169 000. He pays a deposit of 15% and then makes monthly installments of 1% of the leftover amount for 9 years.

i) What amount must Sipho pay for the deposit?

R169 000 x 15% = R25 350

ii) What is the monthly payment that Sipho makes?

R169 000 – 25 350 = R143 650

Monthly instalments = R1 436,50

iii) How much does Sipho pay in total for the car?

= R 1436,50 x 9 x 12 + R25 350 = R180 492.