GRADE 9 – *Fractions Worksheet*

1. Change each mixed number to an *improper fraction*:

   a) $3\frac{1}{4}$ b) $5\frac{1}{2}$ c) $2\frac{7}{8}$ d) $4\frac{7}{9}$ e) $9\frac{1}{7}$ f) $8\frac{2}{3}$

   g) $11\frac{3}{4}$ h) $7\frac{3}{5}$ i) $51\frac{1}{3}$ j) $12\frac{4}{5}$ k) $9\frac{5}{8}$ l) $11\frac{7}{11}$

2. Reduce to *lowest terms*:

   a) $\frac{2}{6}$ b) $\frac{3}{9}$ c) $\frac{7}{14}$ d) $\frac{5}{20}$ e) $\frac{24}{30}$ f) $\frac{72}{36}$

   g) $\frac{24}{96}$ h) $\frac{15}{27}$ i) $\frac{16}{64}$ j) $\frac{72}{96}$ k) $\frac{93}{81}$ l) $\frac{15}{27}$

3. Copy and complete the equivalent fractions:

   a) $\frac{5}{7}=\frac{\square}{49}$ b) $\frac{9}{11}=\frac{\square}{33}$ c) $\frac{15}{10}=\frac{3}{\square}$ d) $\frac{1}{9}=\frac{4}{\square}$

   e) $\frac{45}{18}=\frac{\square}{2}$ f) $\frac{4}{5}=\frac{\square}{35}$ g) $\frac{7}{8}=\frac{21}{\square}=\frac{\square}{24}=\frac{28}{\square}=\frac{84}{\square}$ h) $\frac{9}{12}=\frac{3}{\square}=\frac{\square}{24}=\frac{27}{\square}=\frac{81}{\square}$

4. Arrange the following fractions in order from least to greatest:

   a) $\frac{1}{2},\ 2,\ \frac{1}{16},\ \frac{3}{8},\ \frac{3}{4}$ b) $\frac{7}{12},\ \frac{5}{6},\ \frac{1}{8},\ \frac{3}{4},\ \frac{5}{8}$

5. Evaluate:

   a) $2\frac{2}{3}+1\frac{1}{5}$ b) $3\frac{1}{5}-1\frac{2}{3}$ c) $3\frac{2}{3}+1\frac{1}{4}$ d) $4\frac{1}{3}-1\frac{1}{4}$

   e) $5\frac{2}{5}+1\frac{2}{3}$ f) $3\frac{1}{4}+2\frac{1}{2}+1\frac{1}{5}$ g) $1\frac{1}{12}+2\frac{5}{6}+3\frac{3}{4}$ h) $7\frac{3}{15}-4\frac{1}{12}-1\frac{3}{4}$

   i) $3\frac{3}{5}-\left(3\frac{1}{2}-2\frac{1}{3}\right)$ j) $4\frac{1}{2}+3\frac{3}{8}-7\frac{7}{8}$ k) $\left(3\frac{5}{6}+1\frac{7}{8}\right)-\left(2\frac{3}{8}+\frac{5}{6}\right)$ l) $\frac{5}{6}+\frac{5}{6}+\left(\frac{5}{6}-\frac{3}{4}\right)-\frac{3}{4}$

6. Maxine's report had five parts. The first was ¾ of a page, the second was 2½ pages, the third was 3¾ pages, the fourth was 3 pages and the fifth was 1½ pages. How long was her report?

7. Eight students shared equally three Hawaiian pizzas and two pepperoni pizzas. If each pizza was cut into six slices, how many slices did each student get?

8. State the reciprocal for each of the following:

   a) $\frac{3}{4}$ b) 5 c) $9\frac{1}{3}$ d) 1 e) $4\frac{2}{3}$ f) $6\frac{3}{5}$ g) $\frac{a}{b}$

9. Evaluate:

   a) $\frac{1}{2}\times9$ b) $\frac{3}{5}\times\frac{10}{27}$ c) $\frac{2}{3}\times15$ d) $\frac{2}{3}\times\frac{3}{4}$

   e) $\frac{3}{4}\div\frac{2}{3}$ f) $\frac{4}{5}\div\frac{3}{5}$ g) $\frac{5}{8}\div\frac{5}{4}$ h) $\frac{7}{9}\div\frac{2}{3}$

   i) $2\frac{1}{2}\times2\frac{1}{3}$ j) $2\frac{1}{2}\div1\frac{1}{2}$ k) $3\frac{1}{5}\times3\frac{4}{5}$ l) $5\div\frac{7}{8}$

   m) $8\div1\frac{1}{4}$ n) $3\frac{1}{3}\times1\frac{2}{3}$ o) $2\frac{2}{3}\times2\frac{2}{3}$ p) $7\frac{2}{9}\div2$

   q) $2\frac{2}{3}\times4\frac{7}{8}$ r) $1\frac{7}{8}\times9\frac{7}{9}$ s) $8\frac{2}{5}\div3\frac{1}{3}$ t) $6\frac{2}{3}\div1\frac{7}{8}$

10. Evaluate:

   a) $\left(\frac{1}{3}+\frac{1}{2}\right)\times\frac{6}{7}$ b) $\frac{3}{4}-\frac{2}{5}\times\frac{5}{6}$ c) $\frac{2}{3}\times\frac{1}{2}\times\frac{3}{4}$ d) $\frac{4}{5}\times\frac{3}{4}\div\frac{1}{2}$

   e) $\frac{5}{6}\div\frac{2}{3}\times\frac{1}{5}$ f) $\frac{2}{3}\div\left(\frac{2}{3}+\frac{2}{3}\right)$ g) $\frac{7}{8}\times\left(\frac{4}{7}\div\frac{2}{5}\right)$ h) $\frac{3}{5}\div\frac{2}{3}\times\frac{3}{5}$

do half : a,c,e, ... for each question   (Key)

GRADE 9 – *Fractions Worksheet*

1. Change each mixed number to an *improper fraction*:

   a) $3\frac{1}{4} = \frac{13}{4}$ b) $5\frac{1}{2} = \frac{11}{2}$ c) $2\frac{7}{8} = \frac{23}{8}$ d) $4\frac{7}{9} = \frac{43}{9}$ e) $9\frac{1}{7} = \frac{64}{7}$ f) $8\frac{2}{3} = \frac{26}{3}$

   g) $11\frac{3}{4} = \frac{47}{4}$ h) $7\frac{3}{5} = \frac{38}{5}$ i) $51\frac{1}{3} = \frac{154}{3}$ j) $12\frac{4}{5} = \frac{64}{5}$ k) $9\frac{5}{8} = \frac{77}{8}$ l) $11\frac{7}{11} = \frac{128}{11}$

2. Reduce to *lowest terms*:

   a) $\frac{2}{6} = \frac{1}{3}$ b) $\frac{3}{9} = \frac{1}{3}$ c) $\frac{7}{14} = \frac{1}{2}$ d) $\frac{5}{20} = \frac{1}{4}$ e) $\frac{24}{30} = \frac{4}{5}$ f) $\frac{72}{36} = \frac{6}{3} = 2$

   g) $\frac{24}{96} = \frac{2}{8} = \frac{1}{4}$ h) $\frac{15}{27} = \frac{5}{9}$ i) $\frac{16}{64} = \frac{1}{4}$ j) $\frac{72}{96} = \frac{6}{8} = \frac{3}{4}$ k) $\frac{93}{81} = \frac{31}{27}$ l) $\frac{15}{27} = \frac{5}{9}$ *duplicate of (h)*

3. Copy and complete the equivalent fractions:

   a) $\frac{5}{7} = \frac{\square}{49} = \frac{35}{49}$ b) $\frac{9}{11} = \frac{\square}{33} = \frac{27}{33}$ c) $\frac{15}{10} = \frac{3}{\square} = \frac{3}{2}$ d) $\frac{1}{9} = \frac{4}{\square} = \frac{4}{36}$

   e) $\frac{45}{18} = \frac{\square}{2} = \frac{5}{2}$ f) $\frac{4}{5} = \frac{\square}{35} = \frac{28}{35}$ g) $\frac{7}{8} = \frac{21}{\square} = \frac{21}{24} = \frac{28}{32} = \frac{84}{96}$ h) $\frac{9}{12} = \frac{3}{4} = \frac{18}{24} = \frac{27}{36} = \frac{81}{108}$

4. Arrange the following fractions in order from least to greatest:

   a) $\frac{1}{2}, 2, \frac{1}{16}, \frac{3}{8}, \frac{3}{4} = \frac{8}{16}, \frac{32}{16}, \frac{1}{16}, \frac{6}{16}, \frac{12}{16}$

   in order: $\frac{1}{16}, \frac{3}{8}, \frac{1}{2}, \frac{3}{4}, 2$

   b) $\frac{7}{12}, \frac{5}{6}, \frac{1}{8}, \frac{3}{4}, \frac{5}{8} = \frac{14}{24}, \frac{20}{24}, \frac{3}{24}, \frac{18}{24}, \frac{15}{24}$

   in order: $\frac{1}{8}, \frac{7}{12}, \frac{5}{8}, \frac{3}{4}, \frac{5}{6}$

5. Evaluate:

   $\frac{58}{15} \leftarrow$ a) $2\frac{2}{3} + 1\frac{1}{5} = \frac{8}{3} + \frac{6}{5} = \frac{40}{15} + \frac{18}{15}$ b) $3\frac{1}{5} - 1\frac{2}{3}$ $=$ c) $3\frac{2}{3} + 1\frac{1}{4} = \frac{11}{3} + \frac{5}{4} = \frac{44}{12} + \frac{15}{12}$ d) $4\frac{1}{3} - 1\frac{1}{4}$

   $\frac{106}{15} \leftarrow$ e) $5\frac{2}{5} + 1\frac{2}{3} = \frac{27}{5} + \frac{5}{3} = \frac{81}{15} + \frac{25}{15}$ f) $3\frac{1}{4} + 2\frac{1}{2} + 1\frac{1}{5}$ g) $1\frac{1}{12} + 2\frac{5}{6} + 3\frac{3}{4}$ h) $7\frac{3}{15} - 4\frac{1}{12} - 1\frac{3}{4}$

   i) $3\frac{3}{5} - \left(3\frac{1}{2} - 2\frac{1}{3}\right) = \frac{73}{30} \leftarrow$ j) $4\frac{1}{2} + 3\frac{3}{8} - 7\frac{7}{8}$ k) $\left(3\frac{5}{6} + 1\frac{7}{8}\right) - \left(2\frac{3}{8} + \frac{5}{6}\right)$ l) $\frac{5}{6} + \frac{5}{6} + \left(\frac{5}{6} - \frac{3}{4}\right) - \frac{3}{4}$

   $= \frac{18}{5} - \left(\frac{7}{2} - \frac{7}{3}\right) = \frac{108}{30} - \left(\frac{105}{30} - \frac{70}{30}\right)$

   $\frac{18}{\times 6}$ $\frac{15}{\times 7}$
   $\frac{108}{}$ $\frac{105}{}$

6. Maxine's report had five parts. The first was ¾ of a page, the second was 2½ pages, the third was 3¾ pages, the fourth was 3 pages and the fifth was 1½ pages. How long was her report? $\frac{3}{4} + \frac{5}{2} + \frac{15}{4} + \frac{12}{4} + \frac{3}{2}$

7. Eight students shared equally <u>three</u> Hawaiian pizzas and two pepperoni pizzas. If each pizza was cut into <u>six slices</u>, how many slices did each student get? 5 pizzas × 6 slices = 30 slices $30 \div 8 = 30 \times \frac{1}{8} = \frac{30}{8} = \frac{15}{4} = 3\frac{3}{4}$

8. State the reciprocal for each of the following:

   a) $\frac{3}{4}$ $\frac{4}{3}$ b) 5 $\frac{1}{5}$ c) $9\frac{1}{3}$ $\frac{3}{28}$ d) 1 $\frac{1}{1}$ e) $4\frac{2}{3}$ $\frac{3}{14}$ f) $6\frac{3}{5}$ $\frac{5}{33}$ g) $\frac{a}{b}$ $\frac{b}{a}$

9. Evaluate:

   a) $\frac{1}{2} \times 9 = 4.5 = \frac{9}{2}$ b) $\frac{3}{5} \times \frac{10}{27}$ c) $\frac{2}{3} \times 15 = 10$ d) $\frac{2}{3} \times \frac{3}{4}$

   e) $\frac{3}{4} \div \frac{2}{3} = \frac{3}{4} \times \frac{3}{2} = \frac{9}{8}$ f) $\frac{4}{5} \div \frac{3}{5}$ g) $\frac{5}{8} \div \frac{5}{4} = \frac{8}{8} \times \frac{4}{5} = \frac{1}{2}$ h) $\frac{7}{9} \div \frac{2}{3}$

   i) $2\frac{1}{2} \times 2\frac{1}{3} = \frac{5}{2} \times \frac{7}{3} = \frac{35}{6}$ j) $2\frac{1}{2} \div 1\frac{1}{2}$ k) $3\frac{1}{5} \times 3\frac{4}{5} = \frac{16}{5} \times \frac{19}{5} = \frac{304}{25}$ l) $5 \div \frac{7}{8}$

   $\frac{5}{9}$
   $\frac{\times 16}{}$
   $\frac{114}{} \frac{4}{9}$
   $\frac{19}{} \frac{}{304}$

   m) $8 \div 1\frac{1}{4} = \frac{8}{1} \times \frac{4}{5} = \frac{32}{5}$ n) $3\frac{1}{3} \times 1\frac{2}{3}$ o) $2\frac{2}{3} \times 2\frac{2}{3} = \frac{8}{3} \times \frac{8}{3} = \frac{64}{9}$ p) $7\frac{2}{9} \div 2$

   q) $2\frac{2}{3} \times 4\frac{7}{8} = \frac{8}{3} \times \frac{39}{8} = \frac{39}{3} = 13$ r) $1\frac{7}{8} \times 9\frac{7}{9}$ s) $8\frac{2}{5} \div 3\frac{1}{3} = \frac{42}{5} \times \frac{3}{10} = \frac{126}{50}$ t) $6\frac{2}{3} \div 1\frac{7}{8}$

10. Evaluate:

   a) $\left(\frac{1}{3} + \frac{1}{2}\right) \times \frac{6}{7} = \left(\frac{2}{6} + \frac{3}{6}\right) \times \frac{6}{7} = \frac{5}{7}$ b) $\frac{3}{4} - \frac{2}{5} \times \frac{5}{6}$ c) $\frac{2}{3} \times \frac{1}{2} \times \frac{3}{4} = \frac{1}{4}$ d) $\frac{4}{5} \times \frac{3}{4} \div \frac{1}{2}$

   e) $\frac{5}{6} \div \frac{2}{3} \times \frac{1}{5}$ f) $\frac{2}{3} \div \left(\frac{2}{3} + \frac{2}{3}\right)$ g) $\frac{7}{8} \times \left(\frac{4}{7} \div \frac{2}{5}\right)$ h) $\frac{3}{5} \div \frac{2}{3} \times \frac{3}{5}$

   $= \frac{5}{\cancel{6}} \times \frac{\cancel{3}}{2} \times \frac{1}{5} = \frac{1}{4}$

   $= \frac{7}{8} \times \frac{\cancel{4}}{\cancel{7}} \times \frac{5}{2} = \frac{10}{8} = \frac{5}{4}$