

MPM1D WORK WITH FRACTIONS

Operations with Fractions

Adding and Subtracting

- 1st Change any mixed fraction to an improper fraction.
- 2nd Simplify the negative signs.
- 3rd Find the lowest common denominator for the fractions.
- 4th Make equivalent fractions using the LCD.
- 5th Add and/or subtract the numerators as is needed and make one fraction out of them with the same LCD.
- 6th Take a look at your answer and try to reduce the fraction if possible.

Multiplying Fractions

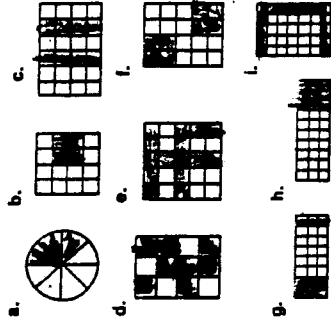
- 1st Change any mixed fraction to an improper fraction.
- 2nd Simplify the negative signs.
- 3rd Reduce any of the fractions if possible.
- 4th Reduce any numerator with any denominator as much as possible.
- 5th Multiply the numerators first, then the denominators and write as one fraction.
- 6th Take a look at your answer and try to reduce the fraction if possible.

Dividing Fractions

- 1st Change the operation to multiplication and write the reciprocal of the fraction to the right of the operation.
- 2nd Follow the steps above for multiplying fractions.

APPLICATIONS AND EXERCISES

1. What fraction of the figure is shaded? Express as two equivalent fractions.



2. Write the equivalent fraction.

- a. $\frac{2}{5} = \frac{8}{20}$
- b. $\frac{3}{4} = \frac{9}{12}$
- c. $\frac{1}{3} = \frac{12}{36}$
- d. $\frac{18}{24} = \frac{3}{4}$
- e. $\frac{18}{24} = \frac{3}{4}$
- f. $\frac{7}{14} = \frac{1}{2}$

3. Which is greater?

- a. $\frac{5}{6}$ or $\frac{7}{8}$
- b. $\frac{1}{3}$ or $\frac{2}{7}$
- c. $\frac{4}{7}$ or $\frac{5}{9}$

4. Express as a fraction greater than 1.

- a. $1\frac{1}{4}$
- b. $2\frac{3}{4}$
- c. $5\frac{1}{9}$
- d. $3\frac{1}{5}$

5. Express as a mixed number.

- a. $\frac{7}{5}$
- b. $\frac{9}{4}$
- c. $\frac{10}{3}$
- d. $\frac{12}{5}$

6. Find the sum or difference.

- a. $\frac{2}{3} + \frac{1}{4}$
- b. $\frac{3}{5} + \frac{2}{4}$
- c. $\frac{2}{3} + \frac{3}{10}$
- d. $\frac{5}{7} - \frac{2}{7}$
- e. $\frac{7}{12} - \frac{1}{3}$
- f. $\frac{3}{4} - \frac{2}{5}$
- g. $\frac{5}{6} - \frac{1}{2}$
- h. $3 + 2\frac{5}{8}$
- i. $2\frac{2}{3} - 1\frac{1}{3}$
- f. $5\frac{1}{2} + 5\frac{3}{4}$
- k. $6\frac{3}{4} + 3\frac{1}{4}$
- l. $9\frac{3}{4} - 7\frac{1}{2}$
- m. $3 - 2\frac{5}{8}$
- n. $1\frac{1}{2} - \frac{5}{8}$
- o. $4\frac{1}{4} - 1\frac{3}{8}$

7. Amiel spent $4\frac{1}{2}$ h working on the written part of a project, and Molly spent $3\frac{3}{4}$ h drawing the scale diagrams for the project.

- a. How much time did they spend altogether?
- b. How much more time did Amiel spend?

8. What fraction of the total time on a trip is spent travelling if $\frac{1}{3}$ of the time is spent sleeping and $\frac{1}{4}$ of the time is spent eating?

9. Find the result.

- a. $\frac{2}{6} + \frac{1}{10} + \frac{2}{5}$
- b. $\frac{2}{3} - \frac{4}{7} + \frac{1}{2}$
- c. $\frac{3}{8} - \frac{2}{3} + \frac{5}{12}$
- d. $\frac{7}{8} + 5\frac{1}{2} + 2\frac{5}{8}$
- e. $2\frac{1}{2} - 1\frac{3}{4} + \frac{5}{8}$
- f. $2\frac{1}{2} - 1\frac{1}{4} - \frac{1}{3}$
- g. $\frac{1}{6} + (\frac{2}{4} - \frac{1}{3})$
- h. $(\frac{1}{6} + \frac{3}{4}) - \frac{1}{5}$

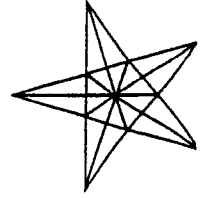
10. Find the result.

- a. $(\frac{1}{2} + \frac{2}{3}) \times \frac{4}{9}$
- b. $1\frac{5}{8} - (\frac{2}{5} + \frac{3}{4})$
- c. $\frac{5}{6} + \frac{1}{3} \times \frac{4}{9}$
- d. $\frac{5}{9} \times \frac{3}{8} - 5$
- e. $\frac{4}{9} \times \frac{3}{4} - \frac{3}{6} \times \frac{2}{5}$
- f. $\frac{3}{4} - \frac{5}{9} \times \frac{2}{10} + \frac{1}{3}$
- g. $\frac{4}{7} + \frac{2}{3} \times \frac{9}{10}$
- h. $\frac{7}{8} - \frac{3}{4} \times \frac{4}{9}$

A. How many squares are in the diagram?



B. How many triangles are in the diagram?



ADDING & SUBTRACTING FRACTIONS

1. $\frac{2}{7} + \frac{3}{7}$

3. $\frac{2}{3} + \frac{5}{6}$

5. $\frac{3}{8} + \frac{2}{5}$

2. $\frac{6}{9} - \frac{4}{9}$

4. $\frac{4}{5} - \frac{1}{10}$

6. $\frac{7}{9} - \frac{2}{5}$

ADDING & SUBTRACTING FRACTIONS - Mixed.

1. $1\frac{2}{3} + 1\frac{3}{4}$

4. $3\frac{5}{9} + 2\frac{4}{5}$

7. $5\frac{7}{10} - 3\frac{2}{5}$

2. $2\frac{1}{5} + 3\frac{3}{10}$

5. $3\frac{3}{5} - 2\frac{1}{5}$

8. $4\frac{3}{7} - 1\frac{3}{8}$

3. $4\frac{5}{12} + \frac{1}{6}$

6. $4\frac{5}{6} - \frac{2}{3}$

MULTIPLYING FRACTIONS

1. $\frac{1}{5} \times \frac{1}{3}$

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

7. $3\frac{2}{5} \times 2\frac{1}{2}$

2. $\frac{2}{5} \times \frac{10}{12}$

5. $\frac{2}{3} \times \frac{3}{7}$

8. $2\frac{4}{7} \times 4\frac{2}{3}$

3. $\frac{16}{24} \times \frac{7}{8}$

6. $2\frac{1}{4} \times 3\frac{1}{3}$

DIVIDING FRACTIONS

1. $\frac{3}{8} \div \frac{3}{4}$

4. $\frac{4}{5} \div \frac{1}{5}$

7. $5 \div \frac{5}{6}$

2. $\frac{6}{7} \div \frac{10}{21}$

5. $3\frac{2}{3} \div 1\frac{1}{6}$

8. $8 \div \frac{1}{4}$

3. $\frac{3}{4} \div 3$

6. $5\frac{3}{5} \div 2\frac{2}{15}$

9. $10 \div \frac{2}{3}$

WORK WITH FRACTIONS

ANSWERS

1. a) $\frac{3}{8} = \frac{6}{16}$ b) $\frac{4}{16} = \frac{2}{8}$ c) $\frac{8}{24} = \frac{1}{3}$ d) $\frac{8}{12} = \frac{2}{3}$

e) $\frac{14}{25} = \frac{28}{50}$ f) $\frac{8}{20} = \frac{4}{10} = \frac{2}{5}$ g) $\frac{9}{24} = \frac{3}{8}$

h) $\frac{9}{30} = \frac{3}{10}$ i) $\frac{15}{35} = \frac{3}{7}$

2a) 15 b) 14 c) 9 e) 9 f) 35

3a) $\frac{5}{8}$ b) $\frac{1}{3}$ c) $\frac{4}{7}$

4a) $\frac{5}{4}$ b) $\frac{8}{3}$ c) $\frac{46}{9}$ d) $\frac{16}{5}$

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

6a) $\frac{4}{12}$ b) $\frac{27}{20}$ c) $\frac{29}{30}$ d) $\frac{3}{7}$ e) $\frac{3}{4}$ f) $\frac{7}{20}$

g) $\frac{1}{3}$ h) $\frac{45}{8}$ i) $\frac{4}{3}$ j) ~~$\frac{108}{10}$~~ $\frac{109}{10}$ (k) $\frac{121}{12}$

l) $\frac{13}{6}$ m) $\frac{3}{8}$ n) $\frac{7}{8}$ o) $\frac{23}{8}$

7. a) $8\frac{1}{4}$ b) $\frac{3}{4}$ c) $8\frac{5}{12}$

Adding + Subtracting Answers

1. $\frac{5}{7}$ 3. $\frac{9}{6} = \frac{3}{2}$ ~~5.~~ $\frac{31}{40}$

2. $\frac{2}{9}$ 4. $\frac{7}{10}$ 6. $\frac{17}{45}$

Mixed

1. ~~$\frac{41}{12}$~~ $\frac{286}{45}$ 7. $\frac{23}{10}$

2. $\frac{55}{10}$ 5. $\frac{7}{5}$ 8. $\frac{171}{56}$

3. $\frac{55}{12}$ 6. $\frac{25}{6}$