

# HW SOL 2.6b

November 18, 2016 10:10 AM

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Math 8 Section 2.6b Combined Operations with Fractions Part 2

1. Evaluate the following and show all your steps. Simplify the expression into lowest terms:

<p>a) <math>\left(\frac{2}{3} - \frac{3}{4}\right)^2 \times \frac{24}{5}</math> <span style="color:red">① Brackets.</span></p> $\left(\frac{8}{12} - \frac{9}{12}\right)^2 \times \frac{24}{5}$ $\left(\frac{-1}{12}\right)^2 \times \frac{24}{5}$ $\left(\frac{-1}{6}\right) \times \left(\frac{-1}{6}\right) \times \frac{24}{5}$ $= \frac{1}{30} //$	<p>b) <math>\frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \times \frac{5}{6} = \frac{1}{6}</math></p>	<p>c) <math>\left(\frac{1}{2} + \frac{2}{3} - \frac{3}{4} + \frac{4}{5}\right) \times \frac{20}{3}</math> <span style="color:red">① Brackets</span></p> $\left(\frac{30}{60} + \frac{40}{60} - \frac{45}{60} + \frac{48}{60}\right) \times \frac{20}{3}$ $\frac{73}{60} \times \frac{20}{3}$ $= \frac{73}{9} = 8\frac{1}{9} //$
<p>d) <math>\frac{1}{5} \times \frac{15}{4} \div \left(\frac{1}{6} + \left(\frac{3}{4}\right)^2 - \frac{1}{2}\right)</math></p> $\frac{1}{5} \times \frac{15}{4} \div \left(\frac{1}{6} + \frac{9}{16} - \frac{1}{2}\right)$ $\frac{1}{5} \times \frac{15}{4} \div \left(\frac{8}{48} + \frac{27}{48} - \frac{24}{48}\right)$ $\frac{1}{5} \times \frac{15}{4} \div \frac{11}{48}$ $\frac{36}{11} //$	<p>e) <math>\left(\left(\frac{1}{3}\right)^2 \times \frac{16}{9}\right) \div \left(\frac{1}{6} + \frac{3}{4} - \frac{7}{8}\right)</math></p> $\left(\frac{1}{3} \times \frac{1}{3} \times \frac{16}{9}\right) \div \left(\frac{1}{6} + \frac{3}{4} - \frac{7}{8}\right)$ $\left(\frac{16}{81}\right) \div \left(\frac{4}{24} + \frac{18}{24} - \frac{21}{24}\right)$ $= \frac{16}{81} \div \frac{1}{24}$ $= \frac{16}{81} \times \frac{24}{1}$ $= \frac{128}{27} //$	<p>f) <math>\left(\left(\frac{2}{3}\right)^2 - \frac{4}{9}\right) \times \left(\frac{4}{9} \times \frac{11}{8} + \frac{3}{5}\right)</math></p> $\left(\frac{4}{9} - \frac{4}{9}\right) \times \left(\frac{4}{9} \times \frac{11}{8} + \frac{3}{5}\right)$ $0 \times (\dots)$ $= 0 //$
<p>g) <math>\left(\frac{7}{8} - \frac{1}{2} \div \left(\frac{8}{9} + \frac{1}{9}\right)^2\right) \times \frac{3}{4}</math></p> $\left[\frac{7}{8} - \frac{1}{2} \div 1^2\right] \times \frac{3}{4}$ $\left[\frac{7}{8} - \frac{1}{2}\right] \times \frac{3}{4}$ $\left[\frac{7}{8} - \frac{4}{8}\right] \times \frac{3}{4}$ $\frac{3}{8} \times \frac{3}{4}$ $= \frac{9}{32} //$	<p>h) <math>\left(\frac{3}{4} + \frac{2}{3} - \frac{1}{3}\right) \div \left(\frac{5}{6}\right)^2 \times \frac{1}{8}</math></p> $\left(\frac{9}{12} + \frac{8}{12} - \frac{4}{12}\right) \div \frac{25}{36} \times \frac{1}{8}$ $\left(\frac{13}{12}\right) \times \frac{36}{25} \times \frac{1}{8}$ $= \frac{39}{200} //$	<p>i) <math>\left(\frac{1}{8} + \frac{5}{6} - \left(\frac{1}{3}\right)^2 \times \frac{3}{2}\right) \div \frac{1}{4}</math></p> $\left(\frac{1}{8} + \frac{5}{6} - \frac{1}{9} \times \frac{3}{2}\right) \div \frac{1}{4}$ $\left(\frac{1}{8} + \frac{5}{6} - \frac{1}{6}\right) \div \frac{1}{4}$ $\left(\frac{3}{24} + \frac{20}{24} - \frac{4}{24}\right) \div \frac{1}{4}$ $\frac{19}{24} \div \frac{1}{4}$ $\frac{19}{24} \times \frac{4}{1} = \frac{19}{6} //$

2. Express in simplest form:

i)  $\frac{4}{5} + \frac{2}{3}$   
 $\frac{1}{3} \times \frac{22}{45}$   
 $= \frac{(\frac{12}{15} + \frac{10}{15})}{(\frac{22}{3 \times 45})}$   
 $= \frac{22}{15} \div \frac{22}{3 \times 45}$   
 $= \frac{1}{15} \times \frac{3 \times 45}{22} = \frac{9}{1} = 9$

ii)  $\frac{2}{3} \div \frac{3}{4}$      $2\frac{1}{5} \times 3$   
 $\frac{1}{6}$      $3\frac{1}{5}$   
 $= \frac{(\frac{2}{3} \times \frac{4}{3})}{(\frac{11}{6})}$      $\frac{(\frac{11}{5} \times 3)}{(\frac{16}{5})}$   
 $\frac{(\frac{8}{9})}{(\frac{11}{6})}$      $\frac{(\frac{33}{5})}{(\frac{16}{5})}$   
 $\frac{(\frac{8}{9} \div \frac{11}{6})}{(\frac{33}{5} \div \frac{16}{5})}$   
 $= 1$

3. Jason purchased  $3\frac{1}{4}$  pounds of cheese. He used half of the purchased cheese for a casserole and  $\frac{1}{4}$  pound for sandwiches. How many pounds of cheese does he have left?

$$\frac{13}{4} - \frac{13}{8} - \frac{1}{4} = \frac{26}{8} - \frac{13}{8} - \frac{2}{8} = \frac{11}{8}$$

$(\frac{13}{4})(\frac{1}{2}) = \frac{13}{8}$   
 $= 1\frac{3}{8}$  lbs of cheese left

4. A 50lb block of cheese is cut into  $1\frac{1}{4}$  lb blocks. Each  $1\frac{1}{4}$  lb block can sell for \$4.25 each. How much money can you make with the 50lb block?

$$\frac{50}{1} \div 1\frac{1}{4} = \frac{50}{1} \times \frac{4}{4} = \frac{200}{4} = 50$$

$$\frac{50}{1} \times \frac{17}{4} = \frac{850}{4} = 212.50$$

$$\frac{50}{1} \div \frac{5}{4} = 40$$

$$40 \times 4.25 = 170$$

$= \$170$

5. There is a box of chocolates and one person eats one-fourth of the pieces and another person eats one-half of the remaining pieces. If there are now six pieces left, then how many pieces were originally in the box?

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

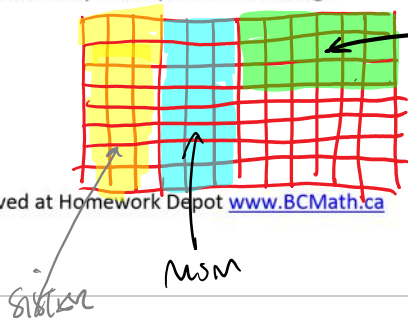
$$\frac{1}{4} = 6$$

24 chocolates

$$\frac{1}{4} \times \frac{2}{4} = \frac{3}{4}$$

$$6 \times 4 = 24$$

6. Jerry has 144 pieces of candy. When he returned home, his sister took  $\frac{1}{4}$  of the candy. Then his mother removed  $\frac{1}{3}$  of what was left. When Jerry wasn't looking, his dog ate  $\frac{3}{8}$  of what was left. What fraction of the original amount did Jerry end up with in his bag?



$$8 \times 12 = 96$$

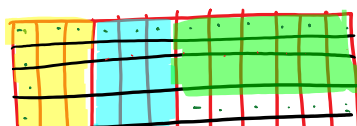
$$5 \times 6 = 30$$

$$\frac{30}{96} = \frac{15}{48} = \frac{5}{16}$$

left

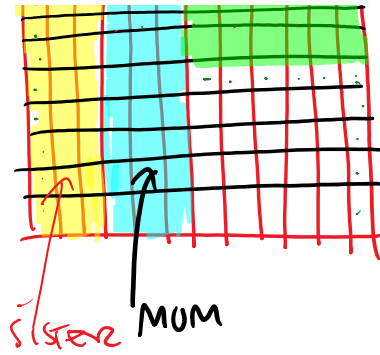
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$$8 \times 12$$



$$\frac{30}{96}$$

$8 \times 12$



$$\begin{array}{r} \overline{\overline{96}} \\ = \frac{10}{32} \\ \frac{5}{16} \end{array}$$

144 CANDIES

SISTER:  $\frac{1}{4}$ , keep  $\frac{3}{4}$  ←

MOM:  $\frac{1}{3}$ , keep  $\frac{2}{3}$  ←

DOG:  $\frac{3}{8}$ , keep  $\frac{5}{8}$  ←

$$\overset{9}{\cancel{144}} \times \overset{3}{\cancel{4}} \times \overset{2}{\cancel{3}} \times \overset{5}{\cancel{8}} = \frac{45}{1}$$

$$\frac{\cancel{45}}{144} = \frac{5}{16}$$