

First name: _____ Last name: _____

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Ratio, Fraction and Percent Homework**Basic problems****1. Evaluate using fractions only. Show work!**

a) $2.6 \times 2 \left(-3\frac{1}{6} + 2 \right)$	b) $\frac{2\frac{5}{7}}{1.5 + 2\frac{1}{6} + 5}$	c) $\frac{-1\frac{1}{2}}{-1\frac{1}{3}} + (-1.5)^2$
d) $\left(\frac{-4}{9} \right) \div \left[\left(\frac{-3}{8} \right) + \left(\frac{-5}{8} \right) \right]$	e) $\left(\frac{-5}{6} + \frac{2}{3} \right) \times \left(\frac{-3}{4} \right) \div \frac{5}{6}$	f) $\frac{-3}{4} \div \frac{1}{5} + \left(\frac{-1}{3} \right) \left(\frac{-5}{2} \right)$

2. Solve for unknowns. Show work!

a) $\frac{5}{6} = \frac{7n+9}{9}$	b) $\frac{p+10}{p-7} = \frac{7}{11}$	c) $\frac{2n}{n-5} = \frac{2n+9}{n+2}$
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Challenge problems

1. If $x : y = 3 : 4$ and $x : (y + z) = 2 : 5$, what is the ratio of $x : z$?

2. The ratio of w to x is $4:3$, of y to z is $3:2$ and of z to x is $1:6$. What is the ratio of w to y ?

3. The scale of a map states that 1 cm represents 150 meters. How many square kilometers would be represented by an area on the map of 80 cm^2 ?

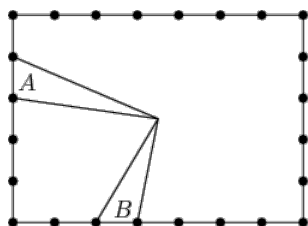
4. A company sells peanut butter in cylindrical jars. Marketing research suggests that using wider jars will increase sales. If the diameter of the jars is increased by 25% without altering the volume, by what percent must the height be decreased?

5. A box contains apple and pears.
An equal number of apples and pears are rotten.
 $\frac{2}{3}$ of all of the apples are rotten.
 $\frac{3}{4}$ of all of the pears are rotten.
What fraction of the total number of pieces of fruit in the box is rotten?

6. Sarah pours four ounces of coffee into an eight-ounce cup and four ounces of cream into a second cup of the same size. She then transfers half the coffee from the first cup to the second and, after stirring thoroughly, transfers half the liquid in the second cup back to the first. What fraction of the liquid in the first cup is now cream?

7. An ice cream cone consists of a sphere of vanilla ice cream and a right circular cone that has the same diameter as the sphere. If the ice cream melts, it will exactly fill the cone. Assume that the melted ice cream occupies 75% of the volume of the frozen ice cream. What is the ratio of the cone's height to its radius? (Note: a cone with radius r and height h has volume $\pi r^2 h / 3$ and a sphere with radius r has volume $4\pi r^3 / 3$)

8. Two opposite sides of a rectangle are each divided into n congruent segments, and the endpoints of one segment are joined to the center to form triangle A. The other sides are each divided into m congruent segments, and the endpoints of one of these segments are joined to the center to form triangle B. [See example figure for $n = 5$, $m = 7$.] What is the ratio of the area of triangle A to the area of triangle B?



9. The intensity of a light source varies inversely as the square of the distance from the source. If the distance from a source increases by 25%, by what percent does the intensity decrease?

10. A chemist has 100 cc of 20% acid, the rest being water. She adds pure acid to make the solution $33\frac{1}{3}\%$ acid. How many ccs of water must she then add to return it to 20% acid?