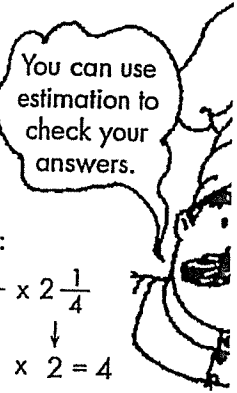


Multiply Mixed Numbers

You must rewrite mixed numbers as improper fractions before you can multiply. Also remember to rewrite whole numbers as improper fractions.

Rewrite mixed numbers as improper fractions.	Multiply the numerators. Multiply the denominators.	Write the product in simplest form.
Multiply: $1\frac{2}{3} \times 2\frac{1}{4}$ $\frac{5}{3} \times \frac{9}{4}$	$\frac{5}{3} \times \frac{9}{4} = \frac{45}{12}$	$\frac{45}{12} = 3\frac{9}{12} = 3\frac{3}{4}$ The product is $3\frac{3}{4}$.



Check:
 $1\frac{2}{3} \times 2\frac{1}{4}$
 $\downarrow \quad \downarrow$
 $2 \times 2 = 4$

► Multiply. Use estimation to check your answers.

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

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

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

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

5. $3\frac{1}{4} \times \frac{8}{9}$

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

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

8. $\frac{5}{6} \times 2\frac{1}{3}$

9. $8 \times 1\frac{3}{4}$



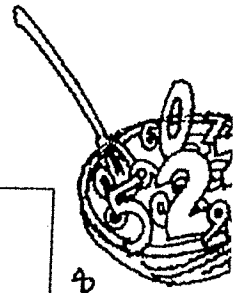
Solve. $(2\frac{2}{3} \times 6) - 1\frac{3}{4}$



Divide Mixed Numbers

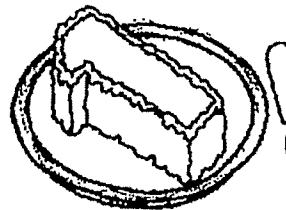
How many times does $1\frac{1}{2}$ go into $3\frac{3}{4}$? Or, what is $3\frac{3}{4} \div 1\frac{1}{2}$?

To divide with mixed numbers, rewrite them as improper fractions. Then multiply by the reciprocal of the divisor.



Rewrite mixed or whole numbers as improper fractions.	Rewrite the problem as a multiplication problem.	Multiply fractions as usual.	Write the answer in simplest form.
Divide: $3\frac{3}{4} \div 1\frac{1}{2}$ $3\frac{3}{4} \div 1\frac{1}{2}$ $\frac{15}{4} \div \frac{3}{2}$	$\frac{15}{4} \div \frac{3}{2} \rightarrow \frac{15}{4} \times \frac{2}{3}$	$\frac{15}{4} \times \frac{2}{3} = \frac{30}{12}$	Check: $2\frac{1}{2} \times 1\frac{1}{2}$ $\frac{5}{2} \times \frac{3}{2} = \frac{15}{4} = 3\frac{3}{4}$ The quotient is $2\frac{1}{2}$.
Divide: $3 \div 4\frac{1}{2}$ $3 \div 4\frac{1}{2}$ $\frac{3}{1} \div \frac{9}{2}$	$\frac{3}{1} \div \frac{9}{2} \rightarrow \frac{3}{1} \times \frac{2}{9}$	$\frac{3}{1} \times \frac{2}{9} = \frac{6}{9}$	Check: $\frac{2}{3} \times 4\frac{1}{2}$ $\frac{2}{3} \times \frac{9}{2} = \frac{18}{6} = 3$ The quotient is $\frac{2}{3}$.

When you divide a larger number by a smaller number, the quotient is greater than 1.
 When you divide a smaller number by a larger number, the quotient is less than 1.



► Divide.

1. $2\frac{1}{2} \div \frac{1}{2}$

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

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

4. $3\frac{3}{8} \div 2\frac{1}{4}$

5. $6\frac{1}{4} \div 1\frac{1}{8}$

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

Solve.

7. Maria walks at a speed of $2\frac{1}{2}$ miles per hour. How long will it take her to walk a 10-mile trail?

Find the sum, difference, product, or quotient.

33. $38.61 + 36.841$

34. $1.755 - 1.23$

35. $0.71 \cdot 9.2$

36. $13.12 \div 0.1$

37. $3.651 - (-12.63)$

38. $-3.9 + (-7.6)$

39. $17.6 \cdot 4.3$

40. $6 \cdot (-16.7)$

41. $26.474 - 14.527$

42. $-2.1 + 3.78$

43. $-6.15 \div (-8.2)$

44. $-12.8 \cdot (-4.88)$

Find the sum, difference, product, or quotient.

45. $15 \frac{1}{2} + 15 \frac{1}{4}$

46. $18 \frac{11}{20} - 17 \frac{1}{2}$

47. $2 \frac{1}{4} \cdot 1 \frac{4}{5}$

48. $3 \frac{1}{2} \div 1 \frac{3}{7}$

49. $3 \frac{1}{3} - 5 \frac{1}{9}$

50. $5 \cdot (-1 \frac{2}{5})$

51. $-4 \frac{2}{3} + (-1 \frac{3}{4})$

52. $-\frac{5}{6} \div (-2 \frac{1}{6})$

53. $9 \div (-4 \frac{1}{2})$

54. $-18 + 3 \frac{4}{5}$

55. $-5 \frac{2}{3} \cdot (-2 \frac{5}{6})$

56. $-5 \frac{3}{4} - (-3 \frac{7}{8})$

Proportions and Percent

Solving Proportions

- Set cross-products equal to each other and then solve the one-step equation for the given variable.

ex: $\frac{5}{b} = \frac{4}{10} \rightarrow 5 \cdot 10 = 4b \rightarrow \frac{50}{4} = \frac{4b}{4} \rightarrow$ answer: $b = 12.5$

Solving Percent Problems with Proportions

- Set up and solve a proportion as follows: $\frac{\%}{100} = \frac{\text{part}}{\text{whole}}$

ex: 25 is what percent of 500? $\rightarrow \frac{x}{100} = \frac{25}{500} \rightarrow$ answer: $x = 5\%$

ex: What is 15% of 88? $\rightarrow \frac{15}{100} = \frac{x}{88} \rightarrow$ answer: $x = 13.2$

ex: 18 is 30% of what number? $\rightarrow \frac{30}{100} = \frac{18}{x} \rightarrow$ answer: $x = 60$

Solving Percent Problems with Equations

- Translate the question to an equation and then solve. (Be sure to convert percents to decimals or fractions.)

ex: 20 is 40% of what number? $\rightarrow 20 = 0.4x \rightarrow$ answer: $x = 50$

ex: 8 is what percent of 32? $\rightarrow 8 = 32x \rightarrow x = 0.25 \rightarrow$ answer: 25%

ex: What is 25% of 88? $\rightarrow x = 0.25 \cdot 88 \rightarrow$ answer: $x = 22$

Real-World Percent Problems

(This is just one way of many to solve real-world percent problems)

- Tax:** Find the amount of tax using a proportion or equation. Then add the tax to the original amount to find the total cost.
- Discount:** Find the amount of the discount using a proportion or equation. Then subtract the amount of discount from the original price to find the sale price.

Solve the proportion.

77. $\frac{h}{6} = \frac{20}{24}$

78. $\frac{5}{7} = \frac{c}{14}$

79. $\frac{6}{8} = \frac{21}{b}$

80. $\frac{30}{j} = \frac{26}{39}$

81. $\frac{5}{k} = \frac{15}{20}$

82. $\frac{32}{112} = \frac{a}{14}$

83. $\frac{16}{7} = \frac{8}{g}$

84. $\frac{w}{60} = \frac{15}{200}$

Solve the percent problem.

85. Find 15% of 85.

86. 6 is 75% of what number?

87. 40 is what percent of 320?

88. What is 20% of 45?

89. 70 is what percent of 350?

90. Find $33\bar{3}\%$ of 81.

91. A \$58 camera is on sale for 20% off. Find the sale price.

92. Find the total price of a \$14.00 shirt including the 7% sales tax.

Geometry

Geometry Basics

- Perimeter is the distance around a polygon
- Circumference is the distance around a circle
- Area is the space inside a figure
- Volume is the capacity of a 3-dimensional figure
- Surface Area is the sum of the areas of all the faces on a 3-dimensional figure

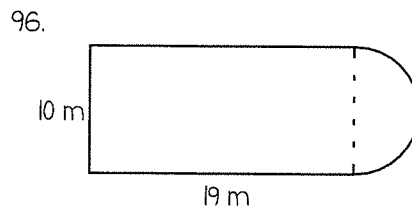
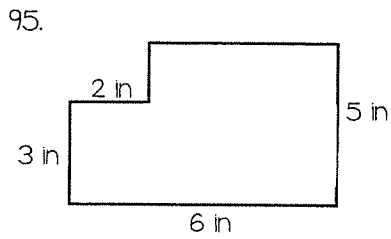
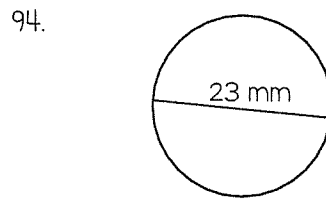
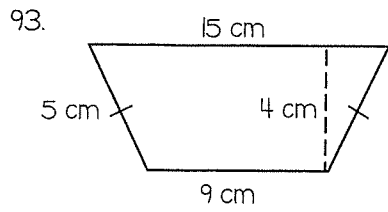
2-Dimensional Geometry Formulas

- Perimeter of Any Figure: sum of side lengths
- Circumference = $\pi \cdot \text{diameter}$
- Area of Parallelogram = base \cdot height
- Area of Triangle = $\frac{1}{2} \cdot \text{base} \cdot \text{height}$
- Area of Trapezoid = $\frac{1}{2} \cdot \text{height}(\text{base}_1 + \text{base}_2)$
- Area of Circle = $\pi \cdot \text{radius}^2$

3-Dimensional Geometry Formulas

- Volume of Rectangular Prism = length \cdot width \cdot height
- Volume of Cylinder = $\pi \cdot \text{radius}^2 \cdot \text{height}$
- Surface Area of Rectangular Prism = $2 \cdot \text{length} \cdot \text{width} + 2 \cdot \text{length} \cdot \text{height} + 2 \cdot \text{height} \cdot \text{width}$
- Surface Area of Cylinder = $2 \cdot \pi \cdot \text{radius}^2 + 2 \cdot \pi \cdot \text{radius} \cdot \text{height}$

Find the perimeter (or circumference) and area. Use 3.14 for π .



Find the surface area and volume.

