

Order of Operations

Directions: Simplify each expression using the order of operations.

- Parenthesis
- Exponents
- Multiplication / Division*
- Addition / Subtraction*

$$5 \times (4 \times 6 - 4^2)$$

$$5 \times (4 \times 6 - 16)$$

$$5 \times (24 - 16)$$

$$5 \times (8)$$

$$40$$

**In the order that it appears*

1. $(4 - 2) \times 4 \times 5$	2. $5 + (3 + 3)^2$
3. $3 \times 3 - 4 \div 2$	4. $16 \div (5 - 3)^2$
5. $3 \times 4 \div 2^2$	6. $(8 - 4) \div (2 + 2)$

Factoring Expressions

Directions: Factor each expression.

- Find the GCF of the terms. Factor it out using division.

Example: $40x + 30x^2$

GCF: $10x \dots 10x(4 + 3x)$

1. $36v^2 + 45v$	2. $16n^3 + 10$
3. $24n^2 + 15$	4. $42m^5 - 30m$
5. $21n + 30$	6. $3k^3 - 18k$

7. $15 + 27m^2$	8. $48x^2 + 54x$
9. $4x + 7x^3$	10. $27n + 36$
11. $10n^5 - 15n$	12. $16x - 56$
13. $30m + 10m^2$	14. $10n^{11} - 20n^8$

Adding and Subtracting Integers

Directions: Add and Subtract the integers.

- When you ADD two negatives... it becomes MORE negative. $(-3) + (-5) = -8$
- When you ADD a positive and negative, it's the difference between the numbers, and keep the sign of the larger number. $(-11) + 6 = -5$
- When you see a MINUS sign, change it to addition and change the sign of the second number. $(-3) - 6 = (-3) + (-6) = -9$

1. $(-8) + (-4)$	2. $8 - (-8)$
3. $(-7) + (-4)$	4. $(-1) - (-2)$
5. $(-4) + 7$	6. $(-7) - (-2)$
7. $(-5) - 7 + (-6)$	8. $4 + (-6) + (-5)$
9. $(-5) - 7 + (-6)$	10. $(-1) + (-6) + (-5)$

11. $8 + (-4) + (-1)$	12. $(-5) + 7 - 8$
13. $(-3) + 3 + (-4)$	14. $7 - (-6) + 3$
15. $3 - (-5) + (-6)$	16. $(-6) - 1 - 5$
17. $7 - (-1) + 7 - (-8)$	18. $7 + 1 + (-8) - (-1)$
19. $2 - (-1) + (-5) - (-8)$	20. $8 - (-1) + 6 + (-8)$

Multiplying and Dividing Integers

Directions: Multiply and divide integers

- MULTIPLY and DiVIDE: If the signs are the same, its POSITIVE. If the signs are opposite its NEGATIVE.

$$(-3)(-4) = 12$$

$$(-3)(4) = -12$$

$$24 \div (-8) = -3$$

$$(-24) \div (-8) = 3$$

1. $(-9)(-11)$	2. $(9)(-9)$
3. $(-12)(4)$	4. $(-10)(-6)$
5. $(9)(-3)$	6. $(4)(-8)$
7. $(-5)(-5)$	8. $(-3)(-11)$

9. $(-7)(8)$	10. $(12)(-5)$
11. $(-18) \div (9)$	12. $(-40) \div (8)$
13. $(-60) \div (-6)$	14. $(-18) \div (-3)$
15. $(-70) \div (-10)$	16. $(-28) \div (7)$
17. $(-21) \div (-3)$	18. $(-64) \div (8)$
19. $(-12) \div (4)$	20. $(-24) \div (-8)$

One-Step Equations

Directions: Solve each equation.

* Do the opposite operation on both sides.

$$x + 9 = 14$$

$$\quad -9 \quad -9$$

$$x = 5$$

$$\frac{2x}{2} = \frac{16}{2}$$

$$x = 8$$

1. $b + 18 = 21$	2. $-36 = p - 16$
3. $11 = v + 20$	4. $-9x = -27$
5. $m + 14 = 23$	6. $-10 = -20 + a$

Two-Step Equations

Directions: Solve each equation.

- First do the opposite operation of the number NOT attached to the variable (on both sides.) Add or Subtract.

$$\begin{array}{r} 2x + 9 = 13 \\ -9 \quad -9 \end{array}$$

- Second, do the opposite operation of the number attached to the variable (on both sides.) Multiply or divide.

$$\begin{array}{r} \frac{2x}{2} = \frac{4}{2} \\ x = 2 \end{array}$$

1. $4x - 1 = 35$	2. $\frac{x}{7} + 5 = 5$
3. $8 - 3n = -25$	4. $-3v - 3 = -33$
5. $\frac{x}{14} + 1 = 2$	6. $-1 - 5n = 39$

7. $11 = 2 + \frac{x}{2}$	8. $\frac{k}{3} + 4 = 1$
9. $57 = 7 - 5n$	10. $8 = \frac{x}{4} + 7$
11. $-8m - 8 = -32$	12. $6 = 7 + \frac{x}{6}$
13. $-2 = -10 - 8b$	14. $51 = -3 - 9p$

Writing Inequalities

Directions: Write the inequality from each graph.

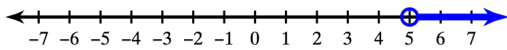
- If shaded to the right, x is GREATER than the circled number
- If shaded to the left, x is LESS than the circled number
- If the circle is filled, it could also be “equal to”

$>$ “Great than”

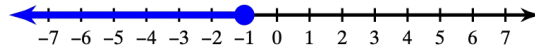
$<$ “Less than”

\geq “Greater than or equal to”

\leq “Less than or equal to”

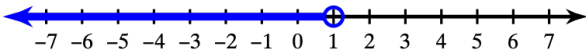


$$x > 5$$

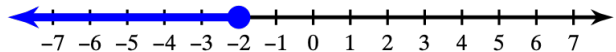


$$x \leq -1$$

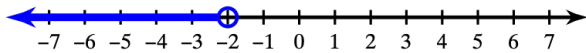
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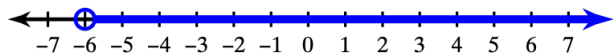
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Percent Increase and Decrease

Directions: Find the percent increase or decrease.

Example: From 90 to 75

$$\frac{\text{New Amount} - \text{Original Amount}}{\text{Original Amount}} = \frac{75 - 90}{90} = \frac{-15}{90} = 17\% \text{ decrease}$$

** A negative answer means a decrease.

1. 59 to 52	2. 83 to 90
3. 66 to 34	4. 88 to 69
5. 27 to 50	6. 34 to 46

Percent Parts and Wholes

Directions: Solve each percent question.

$$\frac{\text{part}}{\text{whole}} = \frac{\%}{100}$$

Example 1: What is 15% of 40?

$$\frac{x}{40} = \frac{15}{100}$$

$$100x = 600$$

$$x = 6$$

Example 2: 30 is 70% of what?

$$\frac{30}{x} = \frac{70}{100}$$

$$70x = 3000$$

$$x = 42.9$$

1. What is 66% of 150?	2. What is 11% of 92?
3. What is 23% of 37?	4. What is 76% of 27?
5. What is 37% of 68?	6. What is 32% of 110?

Adding and Subtracting Fractions

Directions: Add or Subtract the fractions. Write answer in reduced improper form.

Example: $\frac{2}{3} - \frac{1}{5}$

* Find a common denominator.

$$\frac{2 \cdot 5}{3 \cdot 5} - \frac{1 \cdot 3}{5 \cdot 3} = \frac{10}{15} - \frac{3}{15} = \frac{7}{15}$$

* Check to see if the fraction can be reduced.

1. $\frac{3}{2} + \frac{1}{8}$	2. $\frac{5}{4} - \frac{6}{5}$
3. $\frac{1}{6} + \frac{3}{8}$	4. $\frac{4}{3} - \frac{6}{7}$
5. $\frac{13}{8} - \frac{2}{7}$	6. $\frac{1}{3} + \frac{13}{7}$

Multiplying and Dividing Fractions

Directions: Multiply or divide fractions. Write answer in reduced improper form.

Example: $\frac{3}{5} \times \frac{5}{9}$

- Multiply straight across the top and the bottom.
- Reduce your answer

$$\frac{3}{5} \times \frac{5}{9} = \frac{15 \div 15}{45 \div 15} = \frac{1}{3}$$

Example: $\frac{4}{5} \div \frac{1}{3}$

- Flip the second fraction and multiply

$$\frac{4}{5} \times \frac{3}{1} = \frac{12}{5}$$

1. $\left(\frac{2}{5}\right)\left(\frac{1}{4}\right)$	2. $\left(\frac{1}{2}\right)\left(-\frac{7}{5}\right)$
3. $\left(\frac{5}{6}\right)\left(\frac{8}{5}\right)$	4. $\left(\frac{2}{7}\right)\left(-\frac{1}{2}\right)$
5. $\left(\frac{7}{4}\right)\left(\frac{6}{5}\right)$	6. $\left(-\frac{6}{5}\right)\left(-\frac{2}{3}\right)$

Unit Rates

Directions: Find each unit rate.

A unit rate is a ratio of comparing something to 1 unit of something else.

Example: 4 apples cost \$1.60. What is the unit rate? (The cost of 1 apple)

$$\frac{4 \text{ apples}}{1.60} = \frac{1 \text{ apple}}{x}$$

$$4x = 1.60$$

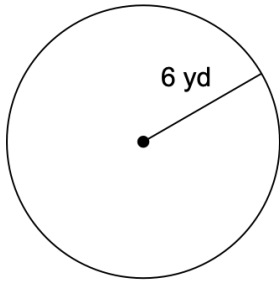
$$x = \$0.40$$

1. A bakery sells 4 muffins for \$6. What is the cost per muffin?	2. Emma ran 3 miles in 24 minutes. What is her pace in minutes per mile?
3. A grocery store sells 5 pounds of apples for \$7.50. What is the price per pound?	4. Liam types 360 words in 6 minutes. How many words does he type per minute?
5. A car travels 180 miles on 6 gallons of gas. What is the car's fuel efficiency in miles per gallon?	6. A printer prints 240 pages in 8 minutes. How many pages does it print per minute?

Circumference of Circles

Directions: Find the Area of the circles.

$$C = 2\pi r$$



$$C = 2\pi r$$

$$C = 2\pi(6)$$

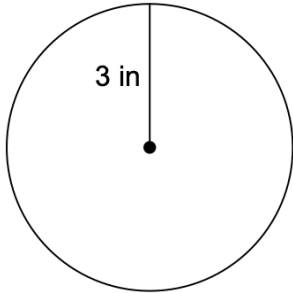
$$C = 12\pi = 37.7 \text{ yd}$$

<p>1.</p> <p>A circle with a center point. A radius is drawn from the center to the circumference, labeled "8 cm".</p>	<p>2.</p> <p>A circle with a center point. A radius is drawn from the center to the circumference, labeled "12 km".</p>
<p>3.</p> <p>A circle with a center point. A radius is drawn from the center to the circumference, labeled "11 in".</p>	<p>4.</p> <p>A circle with a center point. A diameter is drawn through the center, labeled "6.4 yd".</p>
<p>5.</p> <p>A circle with a center point. A diameter is drawn through the center, labeled "12 ft".</p>	<p>6.</p> <p>A circle with a center point. A diameter is drawn through the center, labeled "20.2 ft".</p>

Area of Circles

Directions: Find the Area of the circles.

$$A = \pi r^2$$

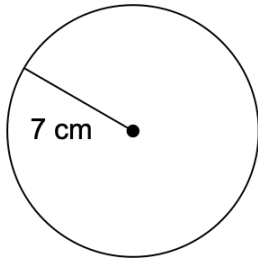


$$A = \pi r^2$$

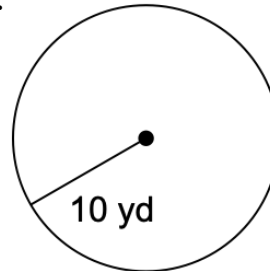
$$A = \pi(3)^2$$

$$A = 9\pi = 28 \text{ in}^2$$

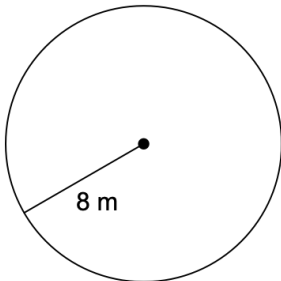
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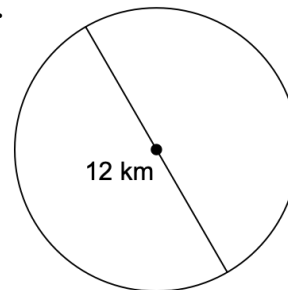
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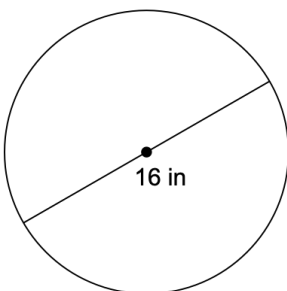
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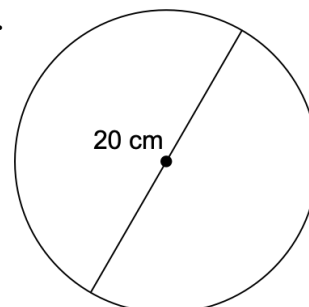
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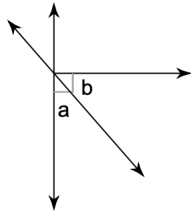
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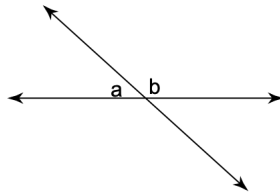
Angle Relationships

Directions: Identify each angle relationship as complementary, supplementary, or vertical.

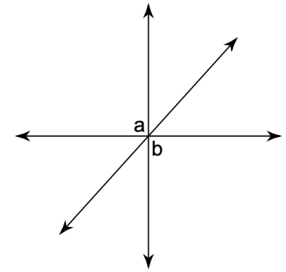
*Complementary: Angles That add to 90 degrees.

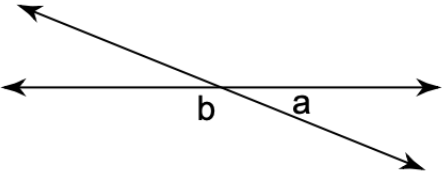


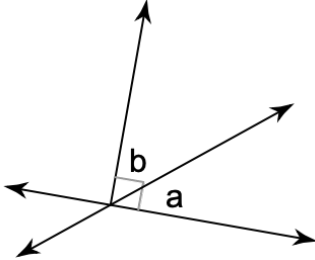
*Supplementary: Angles that Add to 180 degrees

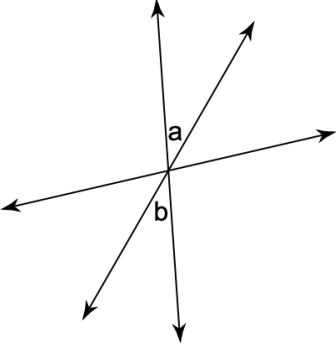


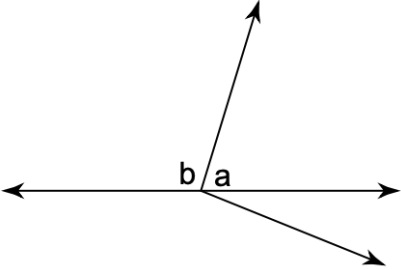
*Vertical: Angles that are across from each other when two lines cross.



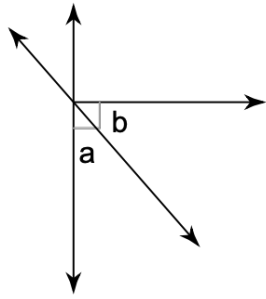
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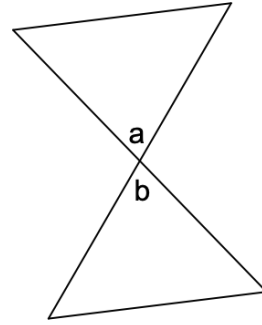
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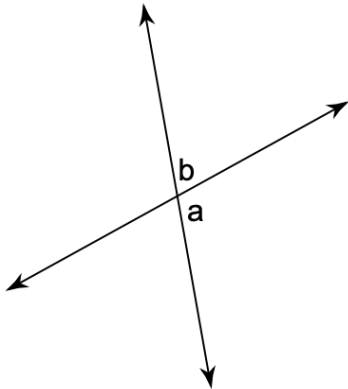
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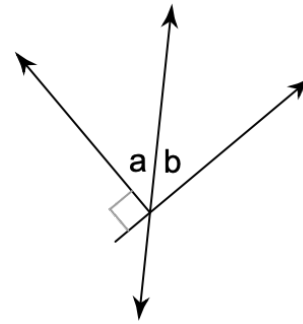
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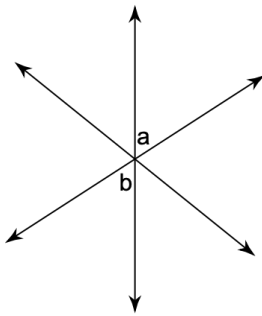
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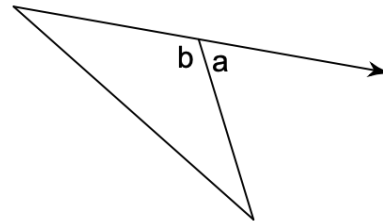
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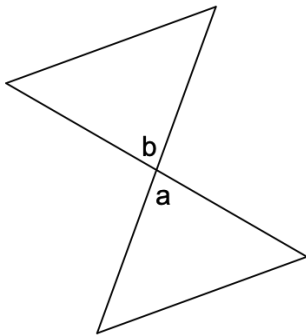
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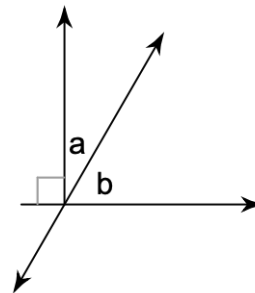
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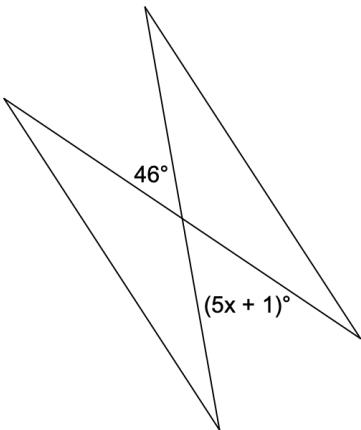
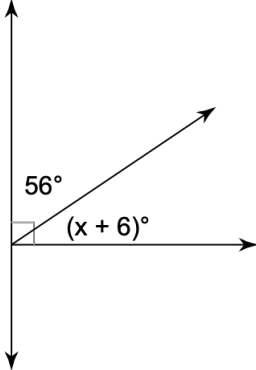
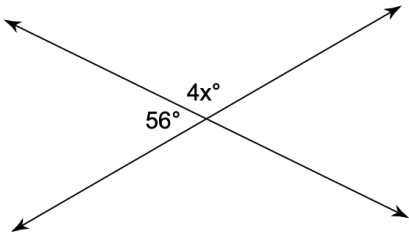
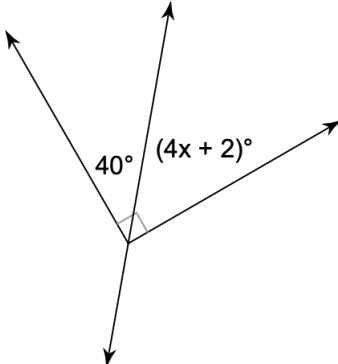
Angle Relationships: Equations

Directions: Identify each angle relationship as complementary, supplementary, or vertical, then set up an equation and solve for the variable.

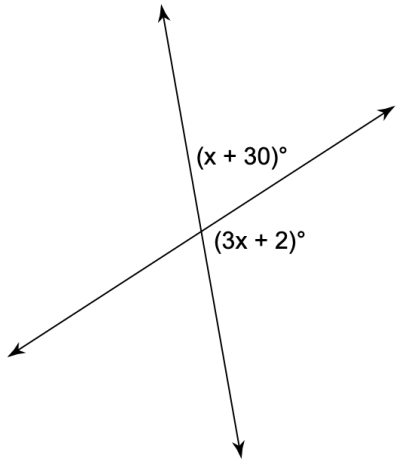
*Complementary: Angles
That add to 90 degrees.

*Supplementary: Angles that
Add to 180 degrees

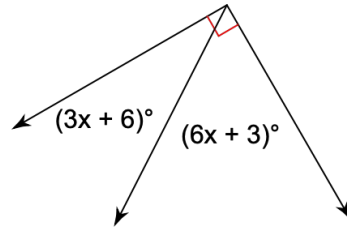
*Vertical: Angles that
are across from each
other when two lines cross.

1. 	2. 
3. 	4. 

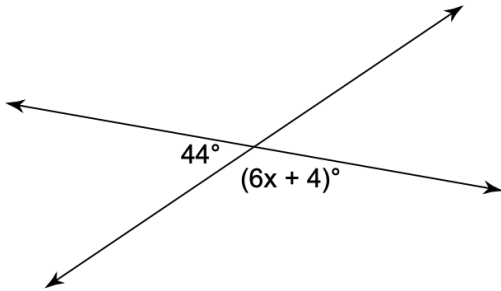
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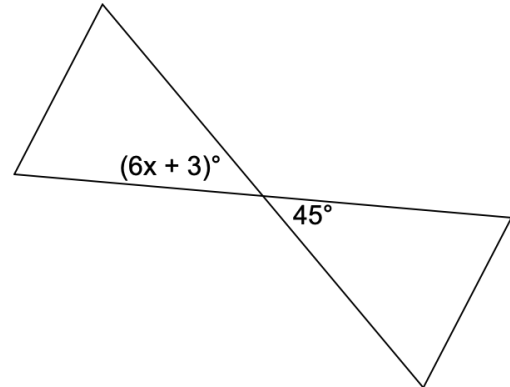
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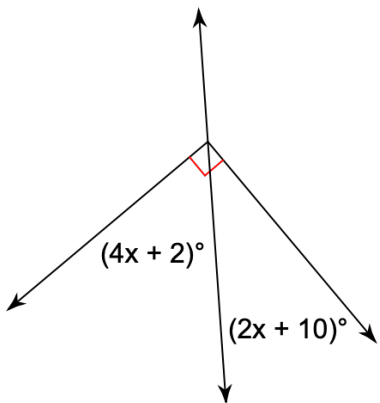
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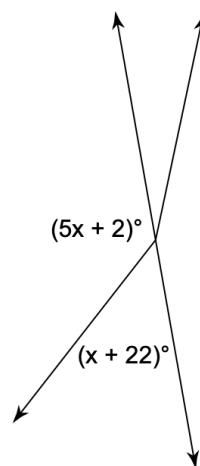
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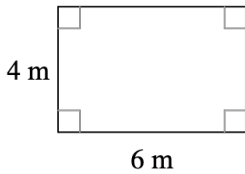
Area of Rectangles, Triangles, and Parallelograms

Directions: Find the area of each polygon below.

Rectangles:

A = length x width

A = lw



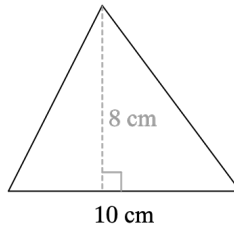
$A = (4)(6)$

$A = 24 \text{ m}^2$

Triangles:

A = Half base x height

$A = \frac{1}{2} bh$



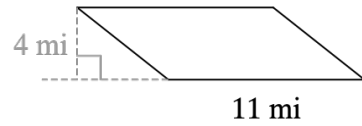
$A = \frac{1}{2} (10)(8)$

$A = 40 \text{ cm}^2$

Parallelograms:

A = length x width

A = lw

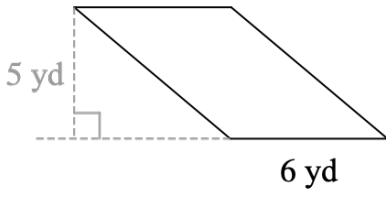


$A = (4)(11)$

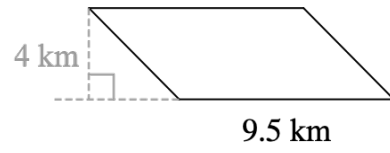
$A = 44 \text{ mi}^2$

<p>1.</p>	<p>2.</p>
<p>3.</p>	<p>4.</p>

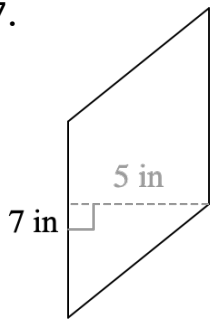
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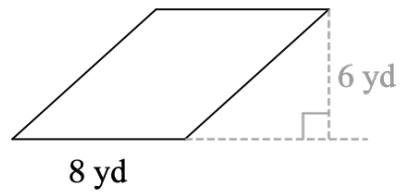
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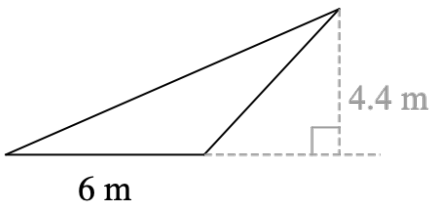
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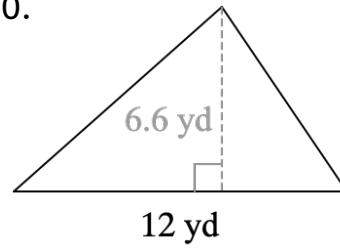
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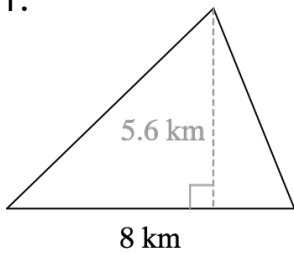
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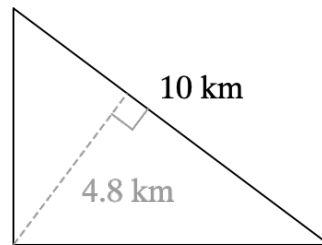
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12.



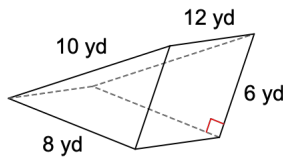
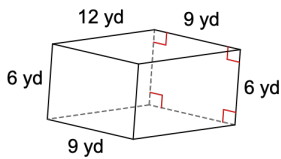
Volume of Prisms

Directions: Find the volume of each prism.

$$V = (\text{Area of the Base})(\text{Height})$$

$$V = Bh$$

*Height is the distance between the bases



$$V = Bh = (lw)h$$

$$V = (9 \times 12)(6) = 648 \text{ yd}^3$$

$$V = Bh = \frac{1}{2}bh(h)$$

$$V = \frac{1}{2}(6 \times 8)(12) = 288 \text{ yd}^3$$

<p>1.</p>	<p>2.</p>
<p>3.</p>	<p>4.</p>