

Lesson #1: Angles & Lines and Types of Triangles (3 Days)

Objectives

Students will be able to...

- Identify types of angles and lines.
- Understand the angle relationships in parallel lines.
- Identify types of triangles.
- Identify angles formed by transversals.

Common Core Standards

LS 11-12.6
RSIT 11-12.2
RLST 11-12.2
Writing 9-10.5
Problem Solving/Critical Thinking 5.4
Health and Safety 6.2, 6.3, 6.6, 6.12
Responsibility and Leadership 7.4, 9.3
Residential and Commercial Construction Pathway D2.1, D3.1, D3.7
CCSS.MATH.PRACTICE.MP6
CCSS.MATH.PRACTICE.MP2
CCSS.MATH.PRACTICE.MP1

Materials

Angles and Lines Vocabulary Terms worksheet
Types of Triangles Worksheet
Angles formed by transversals worksheet
Types of Angles Quiz

Lesson Sequence

- Pass out and review the *Angles and Lines Vocabulary Terms Worksheet*. Have students work together to fill in worksheet and then review as a class. Answer any questions. (50 minutes)

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- Pass out the *Types of Triangles Worksheet*. Review the first page of types of triangles together as a class, then have students fill in the types of a triangles table. Review all together and answer any questions. (50 minutes)
- Review the *Angles formed by transversals worksheet* together as a class. Answer any questions as students have them. (20 minutes)
- Pass out the *Types of Angles Quiz*. Have students complete and then review missed questions as needed. (30 minutes)

Assessment

Check for student understanding throughout each math lesson.
Use types of angles quiz results as a formal assessment. Clarify any misunderstandings as needed prior to starting the cutting board project.

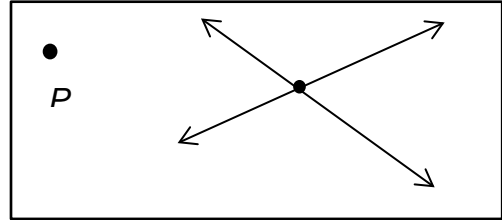
Accommodations/Modifications

Check for Understanding
One on One Support
Visuals as Needed
Extra Time as Needed

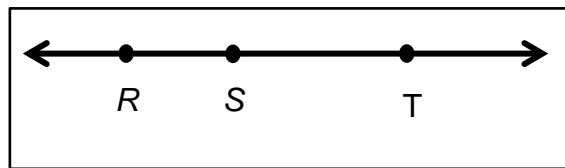
Angles and Lines Vocabulary Terms Worksheet

Look up the meaning for each of the following terms that we will be using. Draw a picture for each term. The first 3 have been done for you.

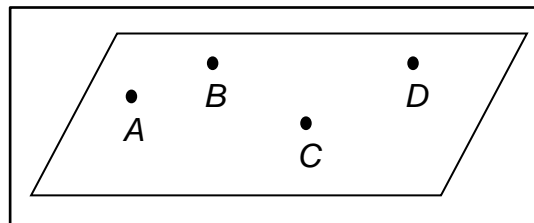
1. **Point:** Is infinitely small and has only location. A point is usually represented by a dot like the period at the end of a sentence but has no area.



2. **Line:** A straight arrangement of points. A line extends infinitely but has no thickness. Three or more points on the same line are said to be **collinear** (passing through a single line). Points *R*, *S*, and *T* are collinear and points not on the same line are said to be **noncollinear**.



3. **Plane:** A flat surface that extends without end, has no thickness, and contains infinitely many points.




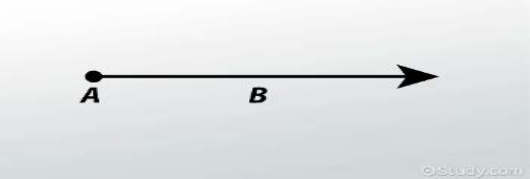
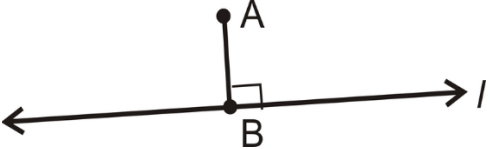
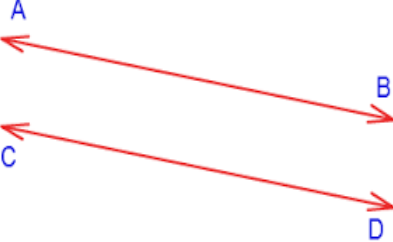
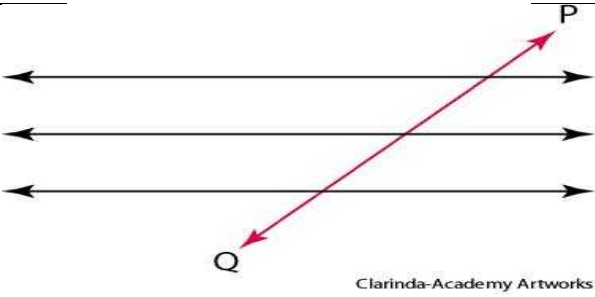
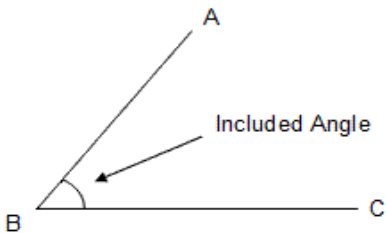
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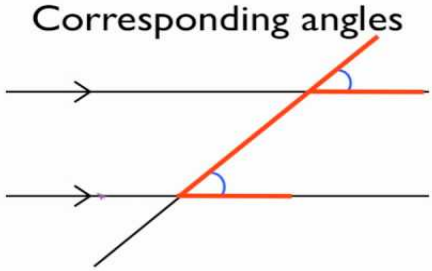
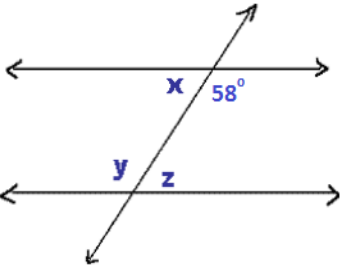
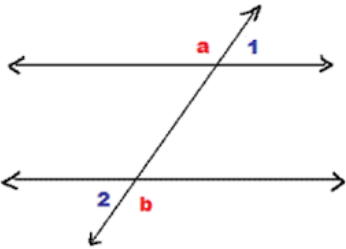
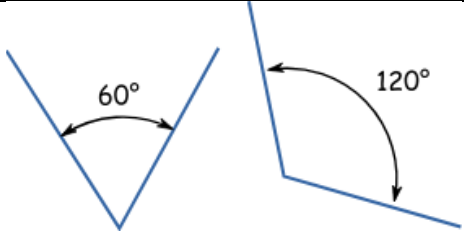
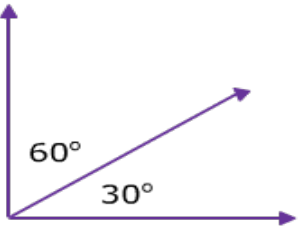
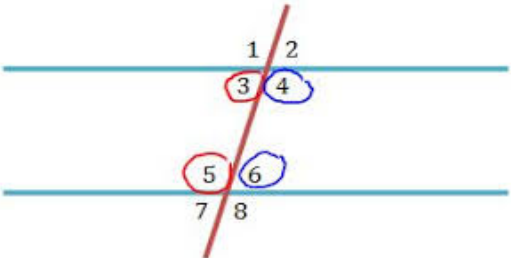
Vocabulary Term	Definition	Picture
Line Segment		
Ray		
Perpendicular Lines		
Parallel Lines		
Transversal		
Angle		
Corresponding Angles		
Alternate Interior Angles		
Alternate Exterior Angles		
Supplementary Angles		

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Complementary Angles		
Consecutive Interior Angles		

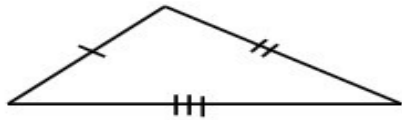
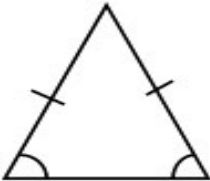

Angles and Lines Vocabulary Terms Worksheet -Answer Key

Vocabulary Term	Definition	Picture
Line Segment	Part of a line that is bounded by two distinct end points.	
Ray	Any of a set of straight lines passing through one point.	
Perpendicular Lines	The relationship between two lines which meet a right angle (90 degrees).	
Parallel Lines	Two lines that are always the same distance apart and never touch.	
Transversal	Intersecting a system of lines.	
Angle	The space (usually measured in degrees) between two intersecting lines or surfaces at or close to the point where they meet.	

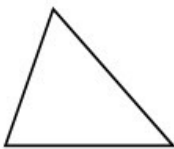
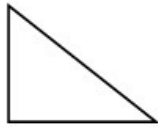
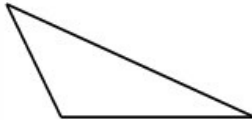
<p>Corresponding Angles</p>	<p>The angles which occupy the same relative position at each intersection where a straight-line crosses two others. If the two lines are parallel, the corresponding angles are equal.</p>	<p>Corresponding angles</p> 
<p>Alternate Interior Angles</p>	<p>A pair of angles on the inner side of each of those two lines but on opposite sides of the transversal.</p>	
<p>Alternate Exterior Angles</p>	<p>A pair of angles on the outer side of each of those two lines but on opposite sides of the transversal.</p>	
<p>Supplementary Angles</p>	<p>Either of two angles whose sum is 180 degrees.</p>	
<p>Complementary Angles</p>	<p>Either of two angles whose sum is 90 degrees.</p>	
<p>Consecutive Interior Angles</p>	<p>The pairs of angles on one side of the transversal but inside the two lines.</p>	

Types of Triangles Worksheet

Based on Sides

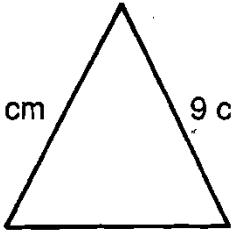
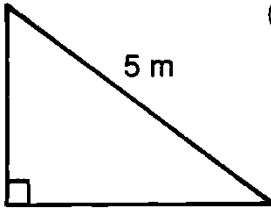
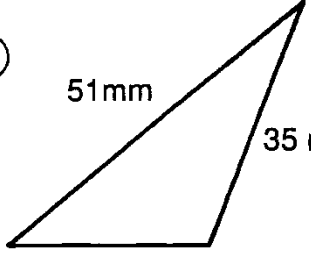
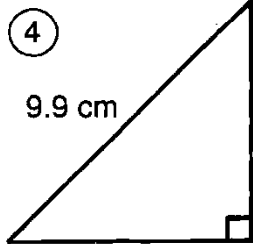
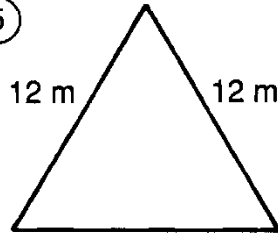
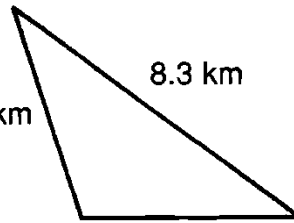
<p>Scalene triangle All 3 sides have different lengths. Its angles are also all different.</p>	
<p>Isosceles Triangle 2 sides have equal lengths. 2 of its angles also measure equal.</p>	
<p>Equilateral Triangle All 3 sides are of same length. All three angles are equal, 60°</p>	

Based on angles


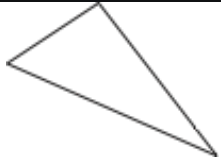


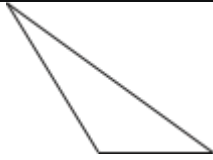
<p>Acute triangle All angles are less than 90°</p>	
<p>Right triangle Has 1 right angle (90°)</p>	
<p>Obtuse triangle Has one angle more than 90°</p>	

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Directions: Classify each triangle two ways. Place the number on the line next to the type of triangle.

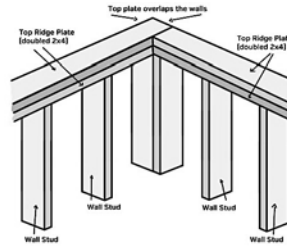
<p>①</p>  <p>9 cm 9 cm</p> <p style="text-align: center;">8 cm</p>	<p>②</p>  <p>3 m 5 m</p> <p style="text-align: center;">4 m</p>	<p>③</p>  <p>51 mm 35 mm</p> <p style="text-align: center;">27 mm</p>	<p>_____ acute; scalene</p> <p>_____ acute; isosceles</p> <p>_____ acute; equilateral</p> <p>_____ right; scalene</p> <p>_____ right; isosceles</p> <p>_____ obtuse; scalene</p> <p>_____ obtuse; isosceles</p>
<p>④</p>  <p>9.9 cm 7 cm</p> <p style="text-align: center;">7 cm</p>	<p>⑤</p>  <p>12 m 12 m</p> <p style="text-align: center;">12 m</p>	<p>⑥</p>  <p>5.1 km 8.3 km</p> <p style="text-align: center;">5.1 km</p>	

Check the boxes that apply to each triangle.

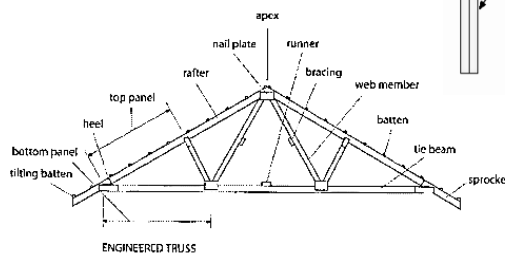
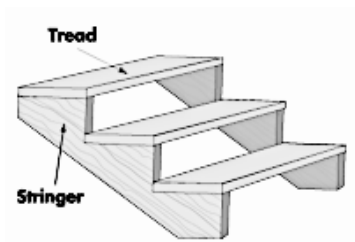
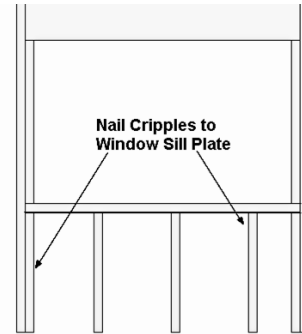
	Triangle	Equilateral	Isosceles	Scalene	Acute	Obtuse	Right
1							
2							
3							
4							
5							

Types of Angles Quiz

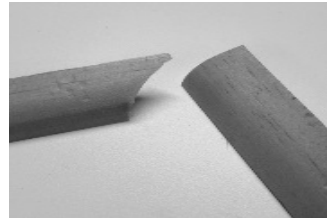
1. The angles formed when studs are nailed correctly to the top and bottom plates of a wall are
- acute angles
 - right angles
 - obtuse angles
 - supplementary angles



2. One example of an obtuse angle is the angle formed
- by two sides of a gable roof.
 - by a stud nailed to a sill plate.
 - by two walls joined at a corner
 - by a stair stringer and the floor underneath it.



3. An acute angle may be formed by the
- top of a roof truss.
 - coped end of molding
 - riser and tread on a stair
 - intersection of two walls



4. Two angles are complementary when their sum equals
- 180 degrees
 - 120 degrees
 - 90 degrees
 - 45 degrees
5. A 45-degree angle to be cut for a miter joint is a(n)
- acute angle
 - right angle.
 - obtuse angle
 - complementary angle.

Types of Angles Quiz - *Answer Key*

1. B
2. A
3. A
4. C
5. A