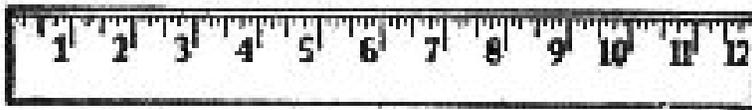**Name:** _____

How Do We Measure Angles?

We can measure lines using a tool called a ruler. A ruler uses units called inches or centimeters to measure how long things are.

We measure angles using a tool called a **protractor**. A **protractor** is *half of a circle*. A protractor uses units called **degrees** *to measure angles*. A protractor can measure angles starting from the left or from the right. It measures from 0 to 180 degrees. 180 degrees is half of the measure of a circle. A protractor is half of a circle, too! Look at the protractor in the picture below to see how this works! This protractor is measuring an angle starting from the left. This angle measures 90 degrees.
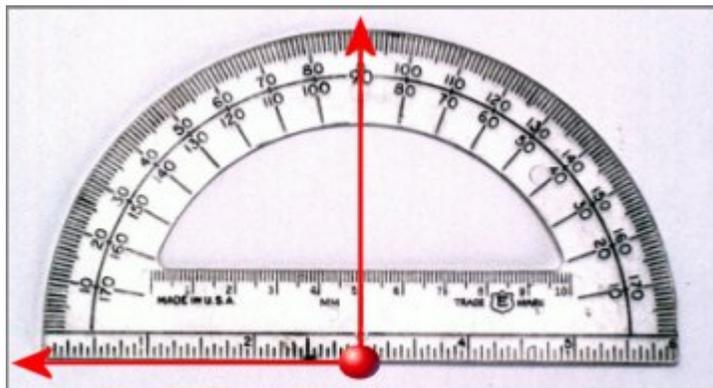
Types of Angles!

There are four different types of angles. These are: acute angles, obtuse angles, right angles, and straight angles. **Right angles *always measure 90 degrees and look like a perfect corner***. **Straight angles *always measure 180 degrees and are the same thing as a straight line***!
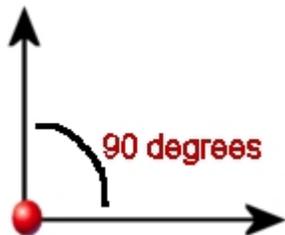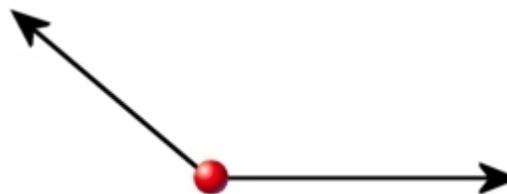
A **right angle**: Right angles **ALWAYS** measure 90 degrees and look like a perfect corner.

A **straight angle**: Straight angles **ALWAYS** measure 180 degrees and are a straight line.
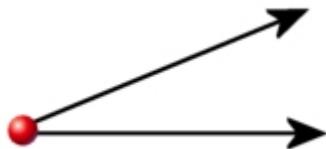
An **acute angle**. Acute angles **ALWAYS** measure less than 90 degrees.

An **obtuse angle**: Obtuse angles **ALWAYS** measure more than 90 degrees, but less than 180 degrees.

Right Angles

Let's look at right angles in real life. Right angles are very important.

How many **right angles** does the piece of paper you are reading have? (Hint: Look at the corners of the paper!) It has _____ right angles.

Look at the corners of the room you are sitting in. Where 2 walls and the ceiling meet to form a corner, there are three right angles. Where the floor and two walls meet to form another corner, there are three right angles. In this drawing the angle on the floor is a little bit more than 90

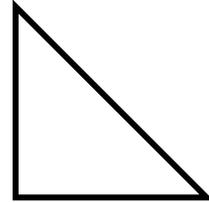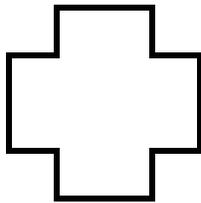degrees, but in a real room, it would measure almost exactly 90 degrees.

Look around the room you are in. What other objects can you see that have right angles? List them in the space below:
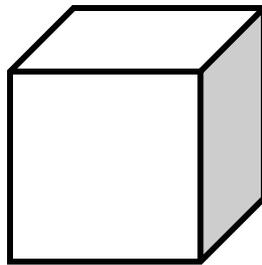
Right angles are found in many geometric shapes and solids. Look at the pictures below. How many right angles does each shape or solid have?

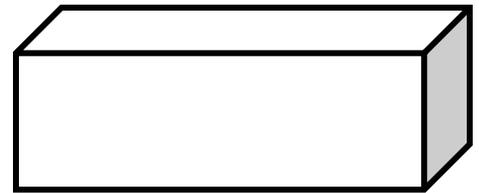_____   _____   _____
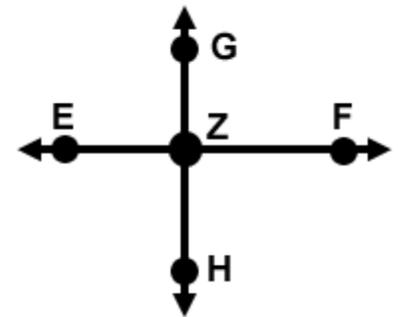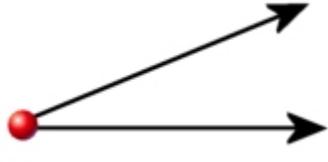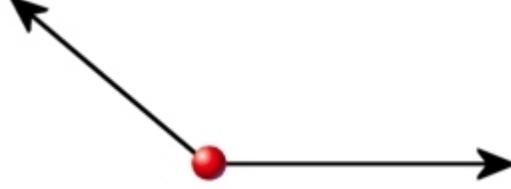
_____   _____   _____
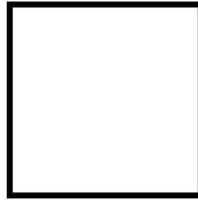
When two lines intersect and are perpendicular, they form four right angles.

When two roads intersect and are perpendicular, they form four right angles.
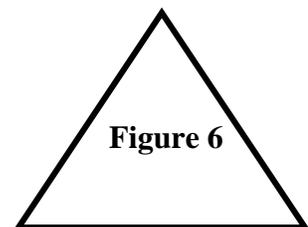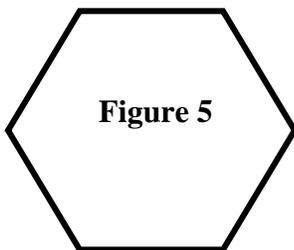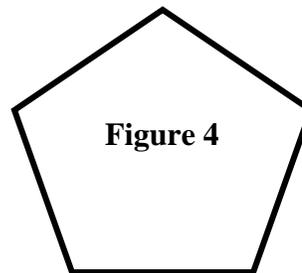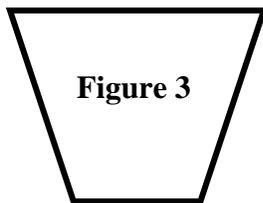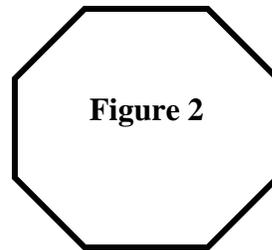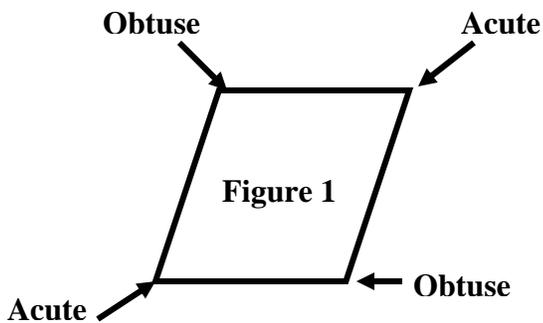
Obtuse and Acute Angles

An **acute angle**. Acute angles **ALWAYS** measure less than 90 degrees.	An **obtuse angle**: Obtuse angles **ALWAYS** measure more than 90 degrees, but less than 180 degrees.

Obtuse and acute angles are found in many geometric shapes and solids.

Look at the shapes below. Label each angle you see as obtuse or acute. Figure one is done for you, as an example:

Obtuse

Acute

Figure 1

Acute

Obtuse

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

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Answer Key:

Page 3:

How many right angles does a piece of paper have? (4 right angles)

How many objects can you see that have right angles? (answers will vary)

Page 4: How many right angles does each shape or solid have?

1. Rectangle: 4

2. Square: 4

3. Triangle: 1

4. Cross: 12

5. Cube: 24 (6 faces X 4 right angles for each face)

6. Rectangular prism: 24 (see above)

Page 5: Label each angle as obtuse or acute:

Figure 2: all angles are obtuse

Figure 3: top two angles are acute; the bottom 2 angles are obtuse

Figure 4: all angles are obtuse

Figure 5: all angles are obtuse

Figure 6: all angles are acute