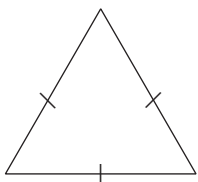


# Exploring Triangles

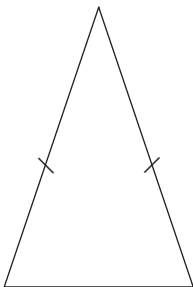


## Quick Review

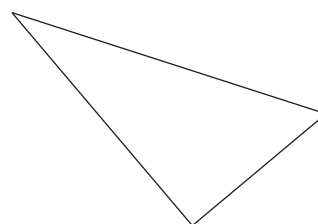
► We can name triangles by the number of equal sides.



An **equilateral triangle** has 3 equal sides. It has three  $60^\circ$  angles. It has 3 lines of symmetry.



An **isosceles triangle** has 2 equal sides. It has 2 equal angles. It has 1 line of symmetry.



A **scalene triangle** has no equal sides, no equal angles, and no lines of symmetry.

## Try These

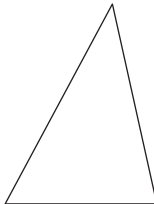
1. Name each triangle as equilateral, isosceles, or scalene.

a)



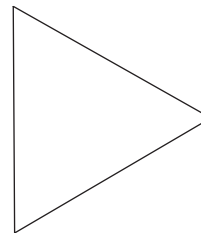
\_\_\_\_\_

b)



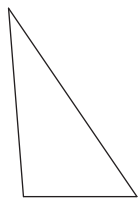
\_\_\_\_\_

c)



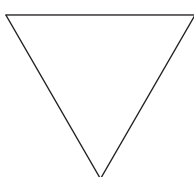
\_\_\_\_\_

d)



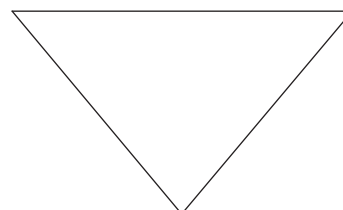
\_\_\_\_\_

e)



\_\_\_\_\_

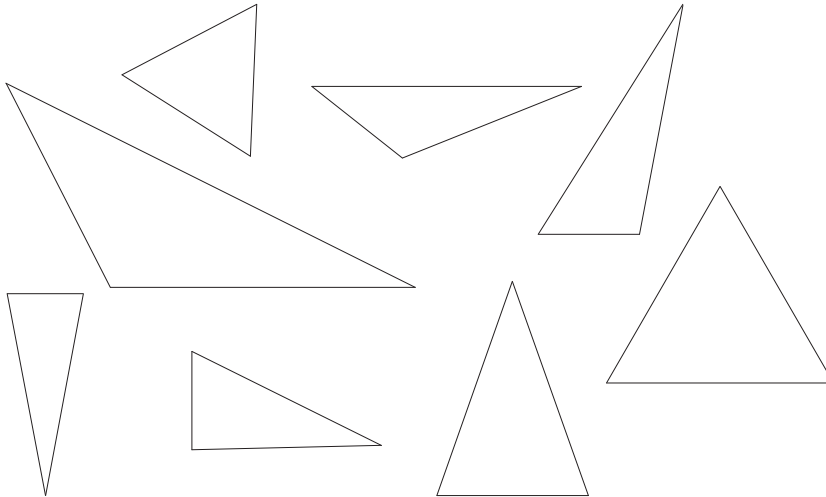
f)



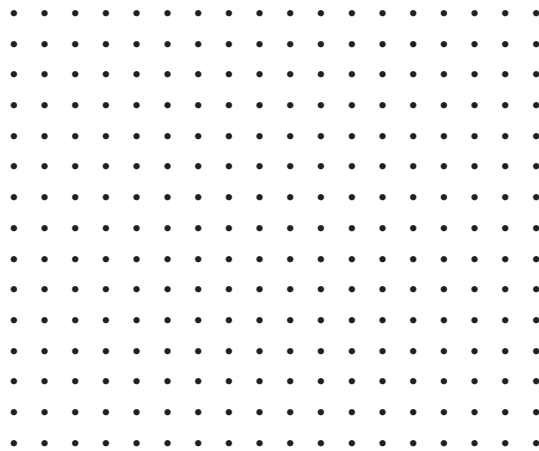
\_\_\_\_\_

## Practice

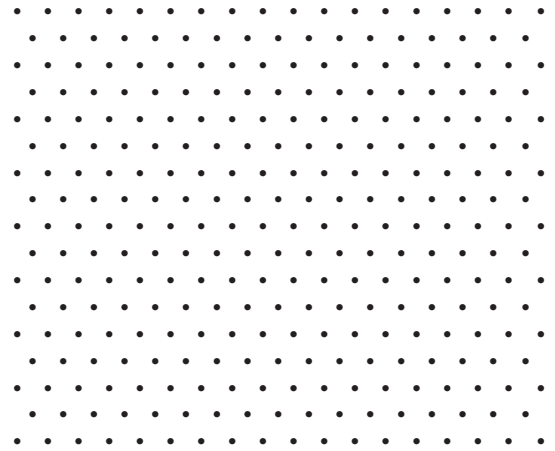
1. Write an S inside the triangles that are scalene.  
Write an I inside the triangles that are isosceles.  
Write an E inside the triangles that are equilateral.



2. a) Draw 3 different isosceles triangles.



- b) Draw 3 different equilateral triangles.



## Stretch Your Thinking

Explain why it is not possible to make an equilateral triangle on a geoboard.

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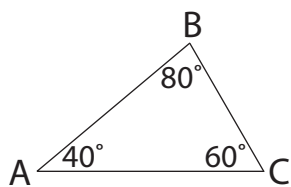
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# Naming and Sorting Triangles by Angles

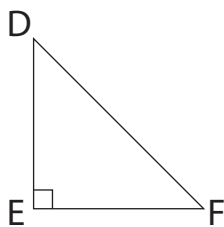


## Quick Review

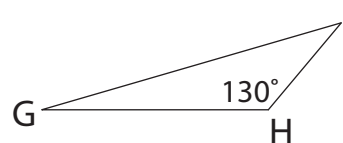
An **acute triangle** has all angles less than  $90^\circ$ .



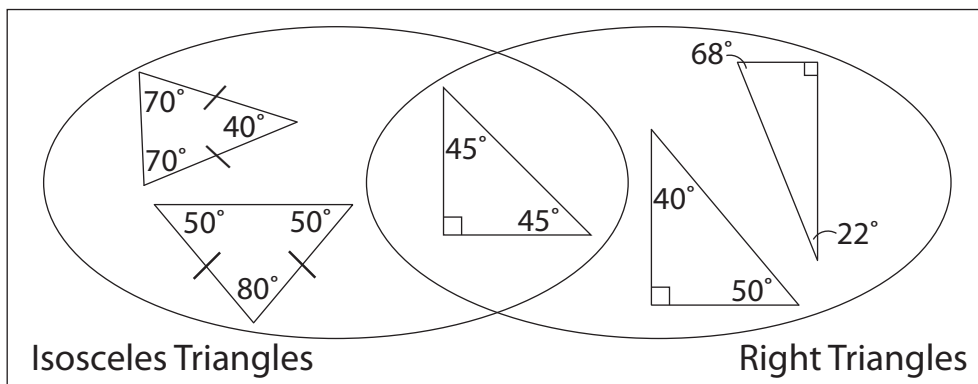
A **right triangle** has one  $90^\circ$  angle.



An **obtuse triangle** has one angle greater than  $90^\circ$ .



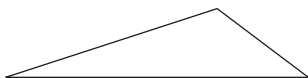
We can sort triangles in a Venn diagram.



## Try These

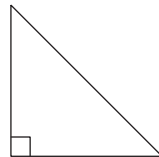
1. Name each triangle as an acute, a right, or an obtuse triangle.

a)



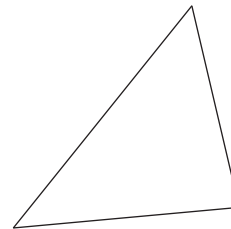
\_\_\_\_\_

b)



\_\_\_\_\_

c)



\_\_\_\_\_

2. Which triangle in question 1 is isosceles? How do you know?

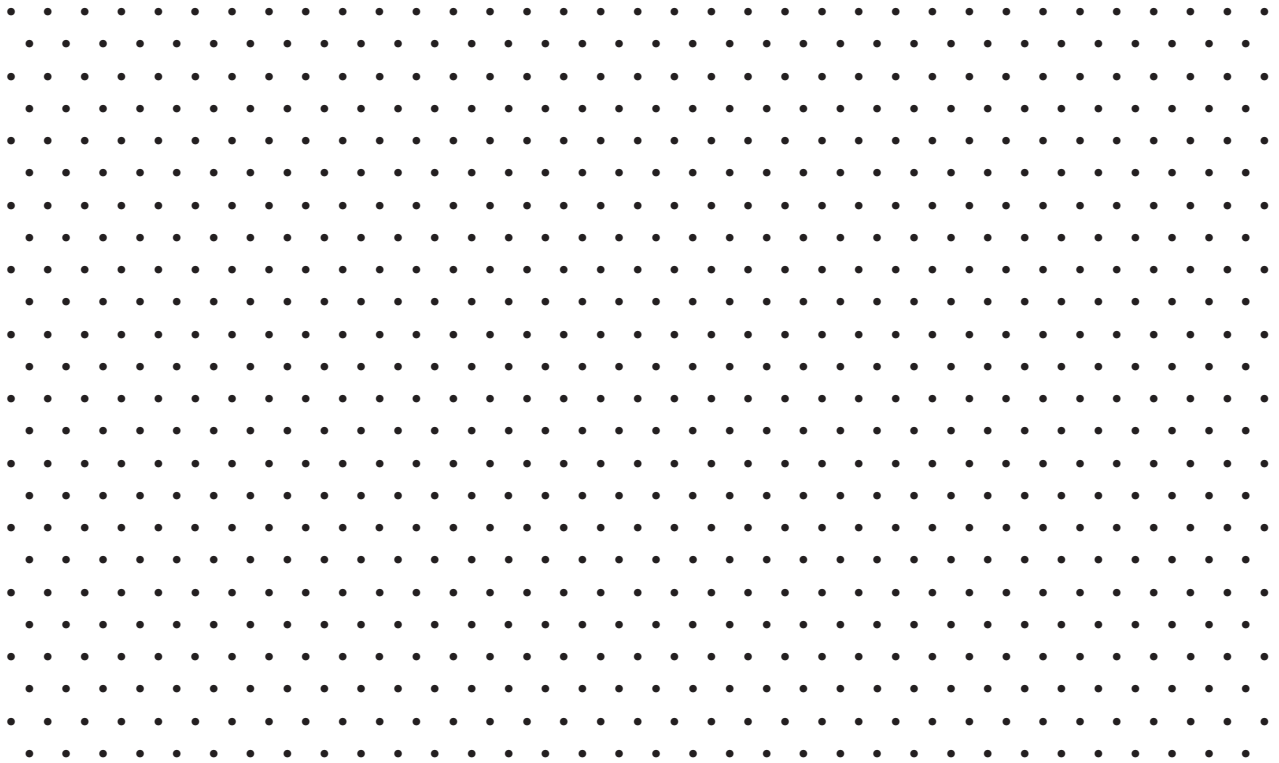
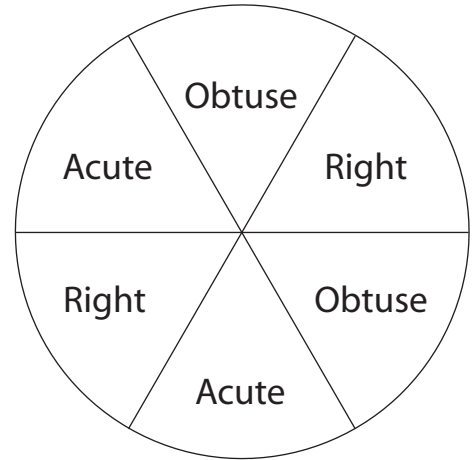
\_\_\_\_\_

## Practice

1. Play this game with a partner.

You will need pencils and an open paper clip to use as a pointer.

- Player A spins the pointer and draws whichever triangle the pointer lands on.
- Player B takes a turn. Player B's triangle can touch, but not overlap.
- Continue taking turns. If you are unable to draw a triangle, you lose your turn.
- The last person to successfully draw a triangle is the winner.



## Stretch Your Thinking

Can you draw each triangle?

- a) A triangle with an obtuse angle and 2 equal sides. \_\_\_\_\_
- b) A triangle with a right angle and no equal sides. \_\_\_\_\_
- c) A triangle with 3 acute angles and 2 of the angles are equal. \_\_\_\_\_
- d) A triangle with 3 right angles. \_\_\_\_\_
- e) A triangle with 3 equal sides and 1 obtuse angle. \_\_\_\_\_

# Drawing Triangles



## Quick Review

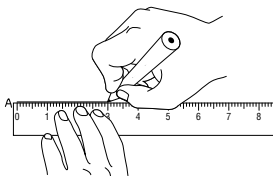
You can use a ruler and a protractor to construct a triangle.

Construct triangle ABC with these measures:

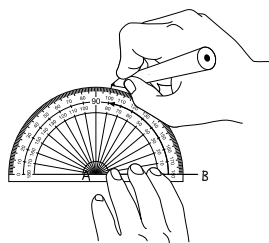
- $AB = 3\text{ cm}$
- $\angle A = 80^\circ$
- $AC = 2.5\text{ cm}$

Sketch the triangle first.  
Label each side and angle.

Draw side AB.  
Make it  
3 cm long.



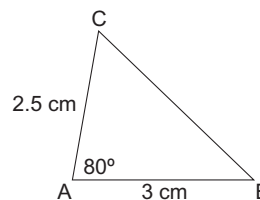
Measure an  
 $80^\circ$  angle at A.



Draw side AC.  
Make it 2.5 cm  
long.



Join C to B to  
make side BC.



## Try These

- Use a ruler and protractor.  
Construct triangle EFG.  
Side EF is 7 cm long.  
Angle F is  $90^\circ$ .  
Side FG is 5.3 cm long.

- What is the measure of:
  - angle E? \_\_\_\_\_
  - angle G? \_\_\_\_\_
- How long is side EG? \_\_\_\_\_

## Practice

1. Construct each triangle using a ruler and a protractor.

Label each triangle with the measures of all the sides and angles.

a) Triangle JKL

- $JL = 4 \text{ cm}$
- $\angle L = 60^\circ$
- $JK = 4 \text{ cm}$

b) Triangle XYZ

- $XY = 5.8 \text{ cm}$
- $\angle X = 90^\circ$
- $\angle Y = 25^\circ$

c) Triangle TUV

- $UV = 6.2 \text{ cm}$
- $\angle T = 70^\circ$
- $\angle U = 45^\circ$

d) Triangle PQR

- $\angle P = 70^\circ$
- $PQ = 3.5 \text{ cm}$
- $\angle Q = 70^\circ$

## Stretch Your Thinking

Suppose you double the side lengths of a regular triangle. What happens to the measure of the angles? Explain.

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