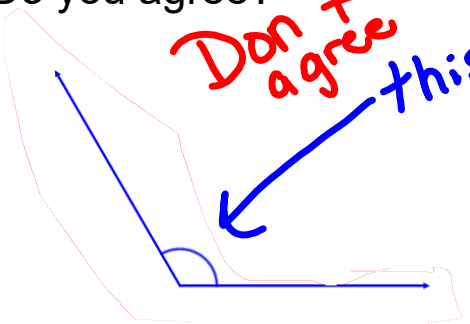
Warm Up Gr. 6

Date: _____

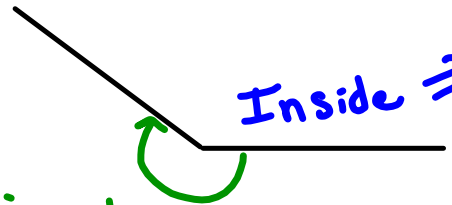
a) A student measured this angle and said it measured 60 degrees. Do you agree?



Don't agree

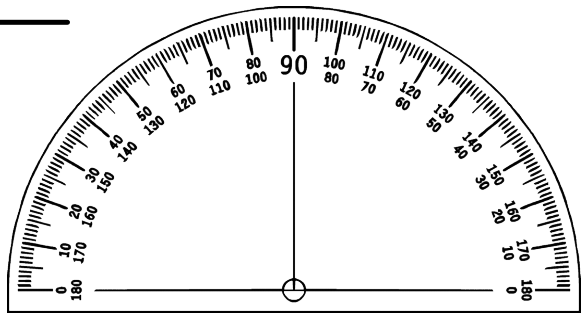
this is obtuse → by definition it is greater than 90° but smaller than 180°

) Find the measure of the reflex angle in



Inside ⇒ 145°

Reflex
= 360° - inside
= 360° - 145°
= 215°

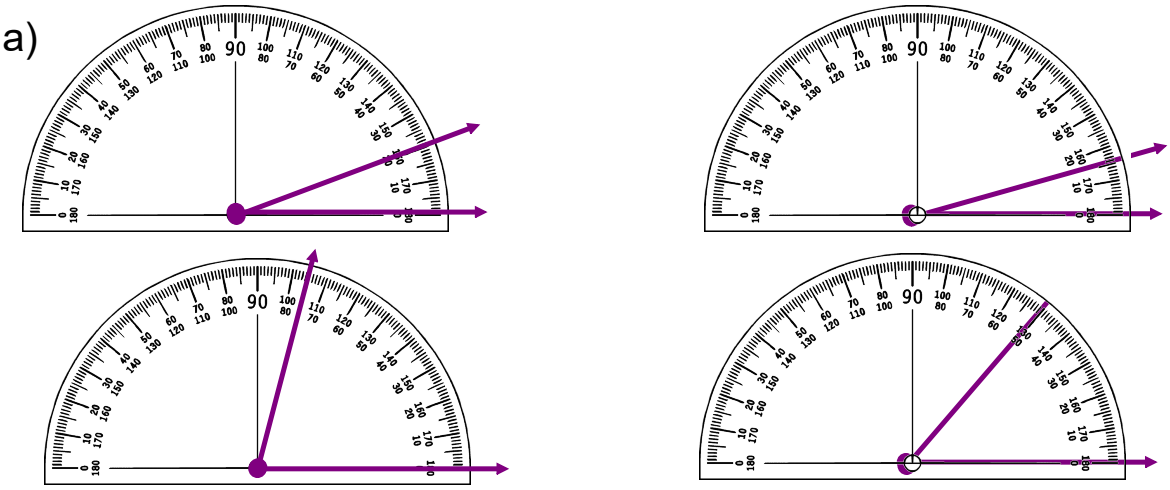


Practice

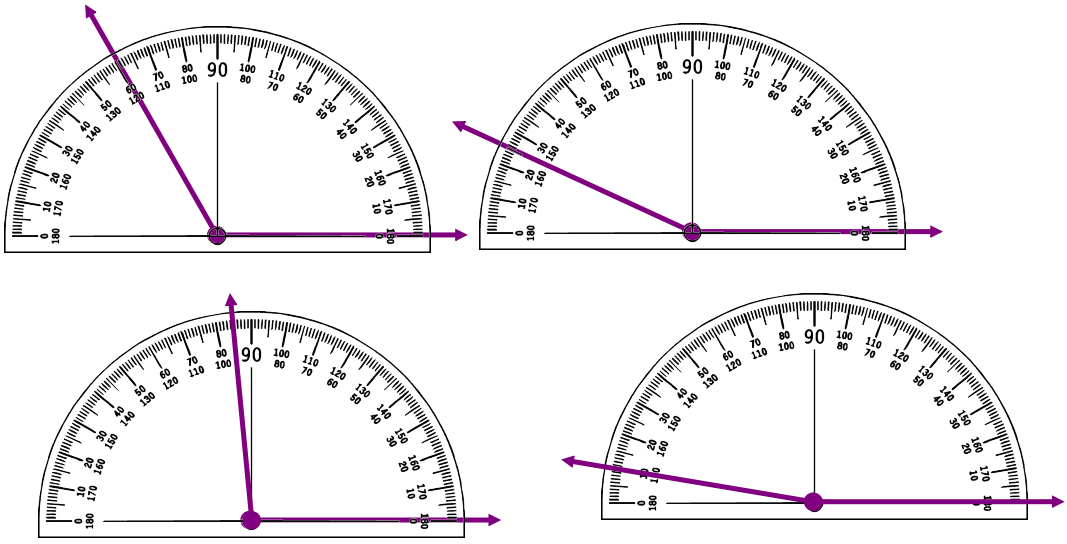
TIP

1. Use a ruler and a protractor.
Draw an acute angle with each measure.
a) 20° b) 15° c) 75° d) 50°

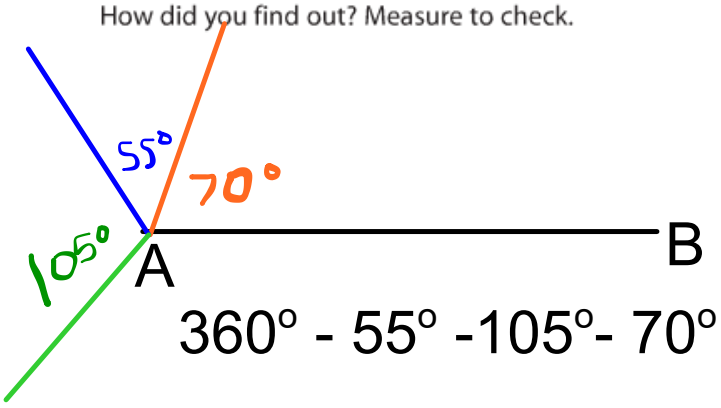
a)

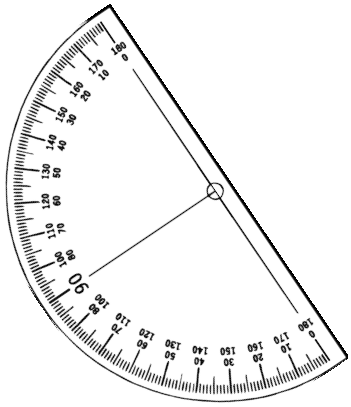


2. Use a ruler and a protractor.
Draw an obtuse angle with each measure.
a) 120° b) 155° c) 95° d) 170°



3. Use a ruler and a protractor.
Draw a horizontal line segment AB.
Each angle you draw should have its vertex at A.
   a) Using AB as one arm, draw a 70° angle.
   b) Use the line you drew in part a as one arm of another angle. Draw a 55° angle.
   c) Use the line you drew in part b as one arm of another angle.
   Draw a 105° angle.
   d) Without using a protractor, find the measure of the angle formed by the horizontal line and the line you drew in part c.
   How did you find out? Measure to check.





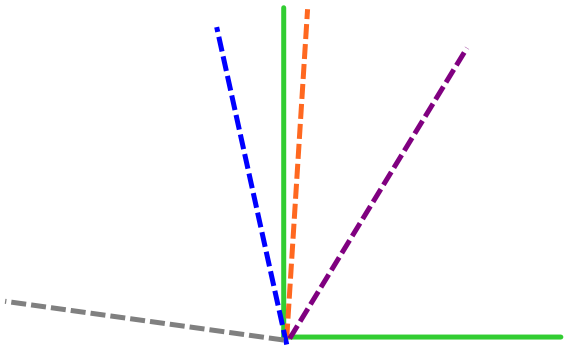
$360° - 55° - 105° - 70°$

$= 360° - 230°$

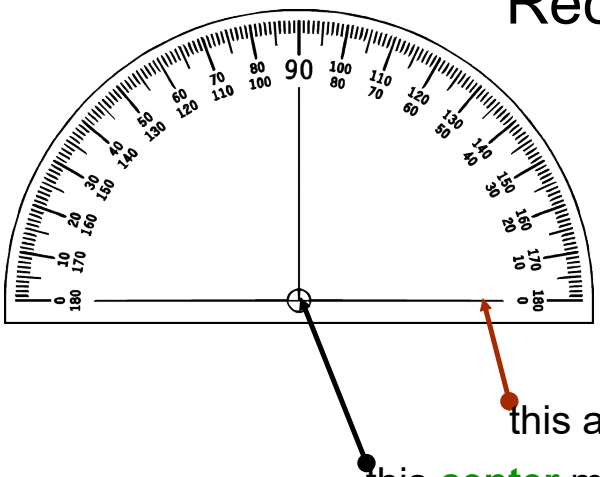
$= 130°$

4. Use only a ruler to draw an angle that you think measures:
   a) 90°
   b) a little less than 90°
   c) about 45°
   d) a little more than 90°
   e) a little less than 180°

   How can you check to see if you are correct?
   Show your work.



Recall



This is a standard protractor. It is used to measure angles, in degrees.

this arm must be placed on one of the arms

this **center** must be placed in the vertex of the angle

RECALL

Drawing Angles With A Protractor

Draw a horizontal line and place a dot on one end

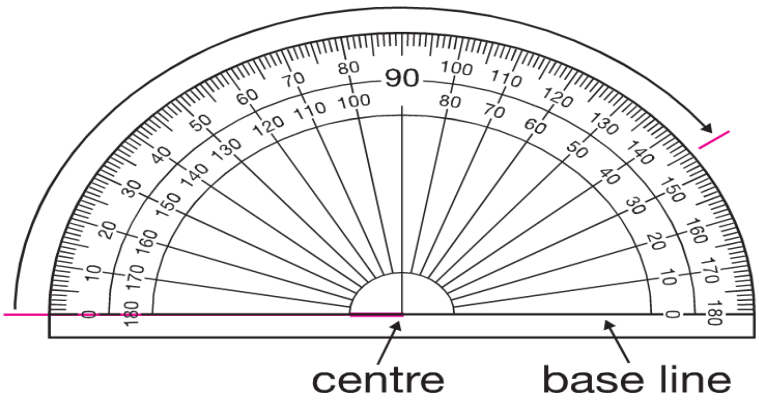
Place the center of the protractor on the dot so that the base line is on the line you drew.

Start at zero and count to the angle of interest

Place a dot at that angle

You can measure from 0° to 180° clockwise or counterclockwise. Remember to start at 0° when you draw an angle.

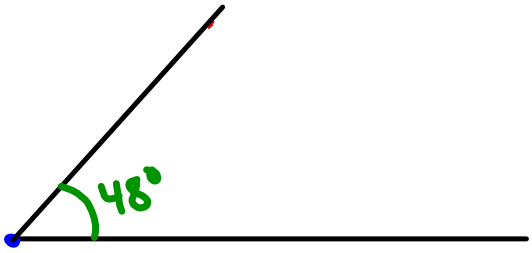
Now connect the new dot to the center dot, using the edge of the protractor as a straight edge



You try

a) draw an angle of 48°

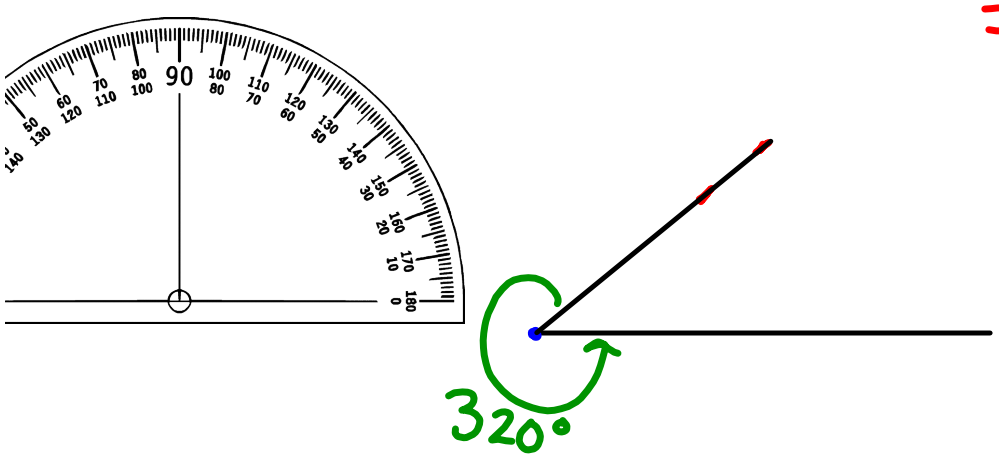
acute



b) draw an angle of 320°

Reflex

(Inside = 360° - Reflex
= 360° - 320°
= 40°



Class/Homework

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Be NEAT

Take your time, use your protractors

#1, 2, 6, 10

6) Reflex → find inside first

a) Inside = 360° − given Reflex
= 360° − 205°
= 155°

↑ draw first then label Reflex 205°

Practice

TIP

1. Use a ruler and a protractor.
   Draw an acute angle with each measure.
   a) 20° b) 15° c) 75° d) 50°

2. Use a ruler and a protractor.
   Draw an obtuse angle with each measure.
   a) 120° b) 155° c) 95° d) 170°

3. Use a ruler and a protractor.
   Draw a horizontal line segment AB.
   Each angle you draw should have its vertex at A.
   a) Using AB as one arm, draw a 70° angle.
   b) Use the line you drew in part a as one arm of another angle. Draw a 55° angle.
   c) Use the line you drew in part b as one arm of another angle.
      Draw a 105° angle.
   d) Without using a protractor, find the measure of the angle formed by the horizontal line and the line you drew in part c.
      How did you find out? Measure to check.

4. Use only a ruler to draw an angle that you think measures:
   a) 90°
   b) a little less than 90°
   c) about 45°
   d) a little more than 90°
   e) a little less than 180°

   How can you check to see if you are correct?
   Show your work.

5. Copy these line segments. Use a ruler and a protractor.
Using each line as one arm, draw a 50° angle.
Label each angle with its measure.
How did you decide which scale to use?

a)

b)

c)

d)

6. Use a ruler and a protractor.
Draw an angle with each measure.

a) 205° b) 200° c) 270°
d) 320° e) 350° f) 300°

7. Draw an acute angle. Without using a protractor, draw an angle that is 90° greater than the angle you drew. Measure the angle with a protractor to check. Explain how you drew the angle.

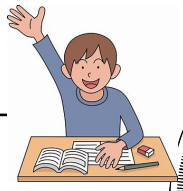
8. a) Without using a protractor, draw a 90° angle.
How can you use this angle to draw a 180° angle?
How are the two angles related?
b) Without using a protractor, draw a 180° angle.
How can you use this angle to draw a 90° angle?
A 45° angle?
How are the three angles related?
Show your work.

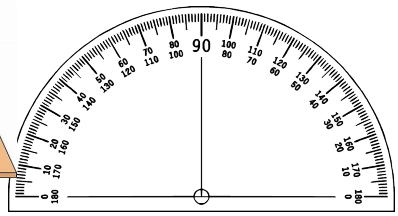
9. a) Draw an obtuse angle.
   Use a protractor to find its measure.
   Label the angle with its measure.
   b) Use tracing paper to copy the angle.
   Rotate the angle $\frac{1}{4}$ turn clockwise about its vertex.
   Measure the angle. What do you notice?
   c) Choose a different rotation.
   Predict what would happen to the size of the angle under this rotation.
   Rotate the angle to check. How can you explain this?

10. Is it possible to draw a reflex angle so the other angle formed by the arms is:
   a) acute? b) obtuse? c) straight?
   Use examples to explain.

Warm Up Gr. 6

Date: _____





a) Draw an angle that is a)64° b) 155°

b) If two inside angles of a triangle is 73°, 121 what is the measure of the third angle? (Show work)

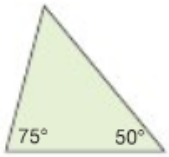
Practice

1. Draw 3 different triangles on dot paper. Measure and record each angle. Find the sum of the measures of the angles for each triangle.

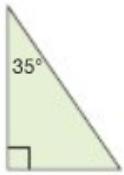
Many solutions

2. Determine the measure of the third angle without measuring.

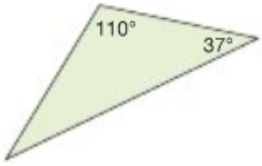
a)



b)



c)



a) Missing angle = $180^o - 50^o - 75^o$

$= 180^o - 125^o$

$= 55^o$

b) Missing angle = $180^o - 35^o - 90^o$

$= 180^o - 125^o$

$= 55^o$

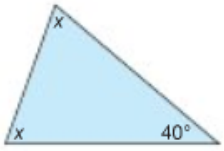
c) Missing angle = $180^o - 37^o - 110^o$

$= 180^o - 147^o$

$= 33^o$

3. The two unknown angles in each triangle below are equal.
Determine the measure of each unknown angle without measuring.
Explain the strategy you used.

a)



$180^o - 140^o$

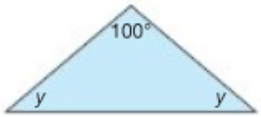
$= 40^o$

Sum of $x + x = 40^o$

$40^o \div 2 = 20^o$

so $x = 20^o$

b)



$180^o - 100^o$

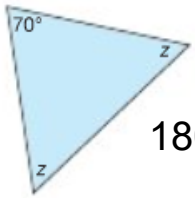
$= 80^o$

Sum of $y + y = 80^o$

$80^o \div 2 = 40^o$

so $y = 40^o$

c)



$180^o - 70^o$

$= 110^o$

Sum of $z + z = 110^o$

$110^o \div 2 = 55^o$

so $z = 55^o$

4. Two angles of a triangle are given.
Find the measure of the third angle.

a) 55°, 105° b) 45°, 90°
c) 30°, 60° d) 25°, 125°

a) Missing angle $= 180^o - 55^o - 105^o$

$= 180^o - 160^o$

$= 20^o$

b) Missing angle $= 180^o - 45^o - 90^o$

$= 180^o - 135^o$

$= 45^o$

c) Missing angle $= 180^o - 30^o - 60^o$

$= 180^o - 90^o$

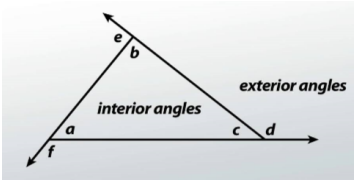
$= 90^o$

d) Missing angle $= 180^o - 25^o - 125^o$

$= 180^o - 150^o$

$= 30^o$

The inside angles of a triangle or any polygon is called the **interior angles**

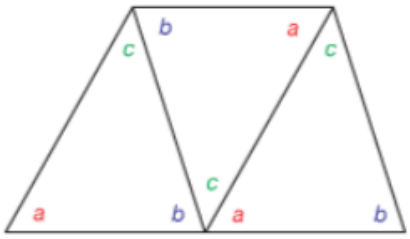


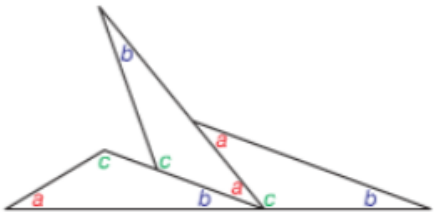
The symbol ∠A refers to angel A

MUST STUDY

The sum of the angles in a triangle is 180° (a straight angle)

$\angle a + \angle b + \angle c = 180^\circ$

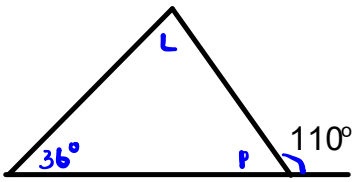




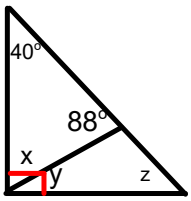
These triangles are not drawn to scale. NO protractors

Find the measure of the missing angles (show work and eplain your strategy used)

a)



b)



Page 148-149

#5,6,7,8,9 Must show work

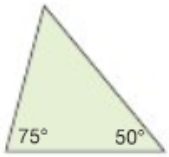
Practice

1. Draw 3 different triangles on dot paper. Measure and record each angle. Find the sum of the measures of the angles for each triangle.

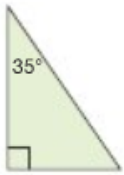
Many solutions

2. Determine the measure of the third angle without measuring.

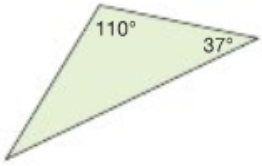
a)



b)



c)



a) Missing angle = $180^o - 50^o - 75^o$

$= 180^o - 125^o$

$= 55^o$

b) Missing angle = $180^o - 35^o - 90^o$

$= 180^o - 125^o$

$= 55^o$

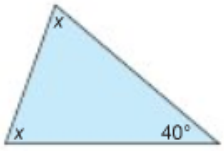
c) Missing angle = $180^o - 37^o - 110^o$

$= 180^o - 147^o$

$= 33^o$

3. The two unknown angles in each triangle below are equal.
Determine the measure of each unknown angle without measuring.
Explain the strategy you used.

a)



$180^o - 140^o$

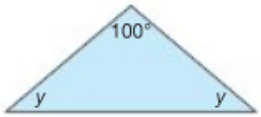
$= 40^o$

Sum of $x + x = 40^o$

$40^o \div 2 = 20^o$

so $x = 20^o$

b)



$180^o - 100^o$

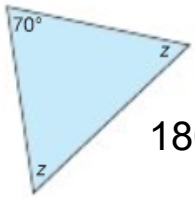
$= 80^o$

Sum of $y + y = 80^o$

$80^o \div 2 = 40^o$

so $y = 40^o$

c)



$180^o - 70^o$

$= 110^o$

Sum of $z + z = 110^o$

$110^o \div 2 = 55^o$

so $z = 55^o$

4. Two angles of a triangle are given.
Find the measure of the third angle.

a) 55°, 105° b) 45°, 90°
c) 30°, 60° d) 25°, 125°

a) Missing angle $= 180^o - 55^o - 105^o$

$= 180^o - 160^o$

$= 20^o$

b) Missing angle $= 180^o - 45^o - 90^o$

$= 180^o - 135^o$

$= 45^o$

c) Missing angle $= 180^o - 30^o - 60^o$

$= 180^o - 90^o$

$= 90^o$

d) Missing angle $= 180^o - 25^o - 125^o$

$= 180^o - 150^o$

$= 30^o$

5. Vegreville, Alberta, is home to the world's largest known Ukrainian egg. It has 1108 triangular pieces with three angles of equal measure.
Find the measure of each angle.
Explain your strategy.

6. Is it possible for a triangle to have:
   a) more than 1 obtuse angle?
   b) 2 right angles?
   c) 3 acute angles?

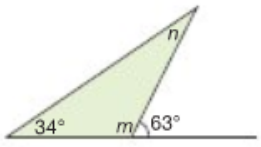
   Explain your thinking.
   Use pictures and words.

7. Find the measure of the third angle in each triangle described below. Then, draw the triangle. Explain how you found each measure.
   a) A triangle with two angles measuring 65° and 55°
   b) A triangle with two equal angles; each measures 40°
   c) A right triangle with a 70° angle

TIP

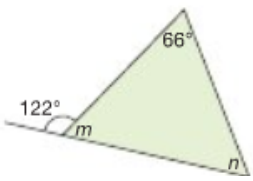
8. Find the measures of the angles labelled *m* and *n*. Explain the strategy you used.

a)



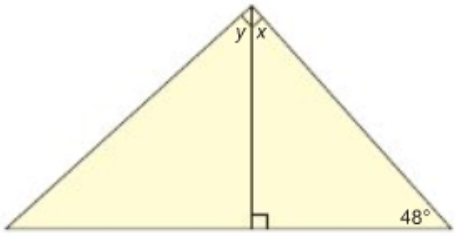
b)

c)

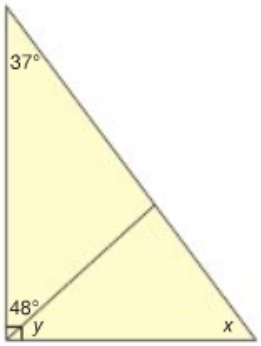


9. Find the measures of the angles labelled *x* and *y*.
Show your work. Explain the strategy you used.

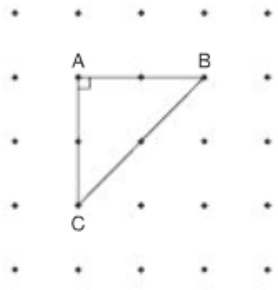
a)



b)



10. Use a geoboard and geobands or square dot paper.
Construct △ABC.



a) Find the unknown angle measures.
Check your answers by measuring with a protractor.

b) Extend AB 1 unit right to D.
Extend AC 1 unit down to E. Join DE.

c) Predict the measure of each angle in the new triangle.
Use a protractor to check. Record your work.

d) Repeat steps b and c two more times.

e) What do you notice about all the triangles you created? Explain.

Attachments

Worksheet Maeasuring Angles with Protractors.pdf