Warm Up Gr. 6

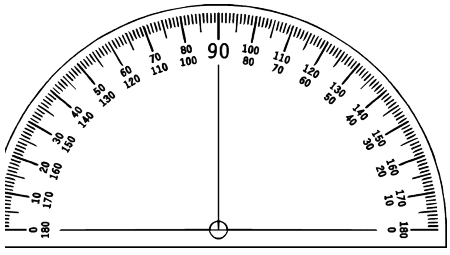
Date: _____

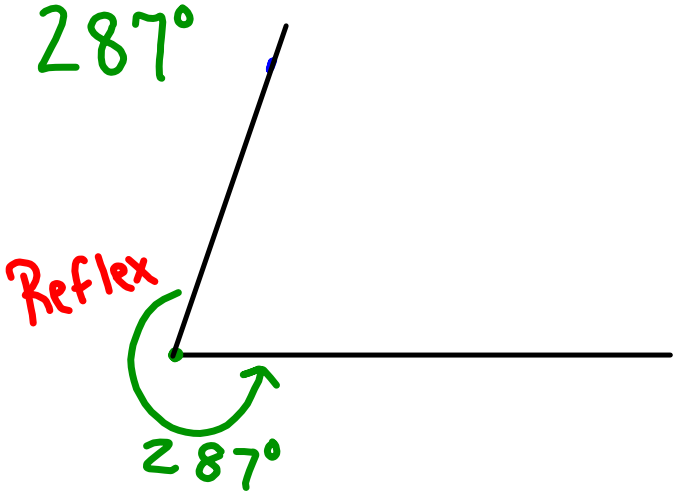
a) Draw an angle that is 86^{o}.

b) If the inside angle is 73^{o}, what is the reflex angle? (Draw the reflex)

Inside Angel 73°

Reflex = 360° - Inside
= 360° - 73°
= 287°



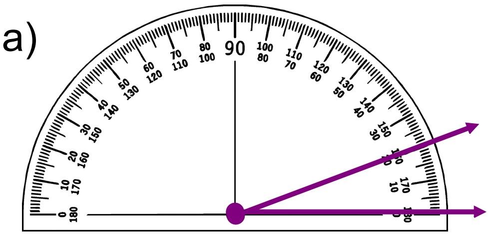


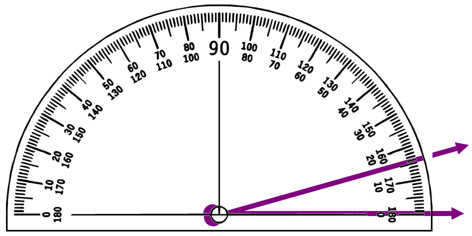
Practice

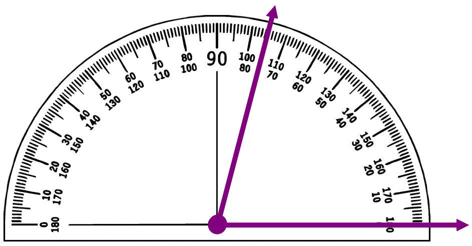
TIP

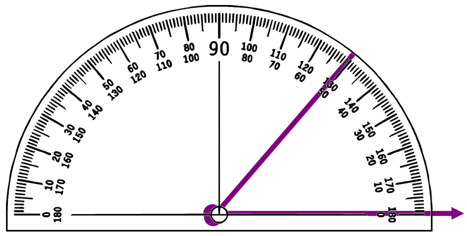
1. Use a ruler and a protractor.
   Draw an acute angle with each measure.
   a) 20°   b) 15°   c) 75°   d) 50°

a)

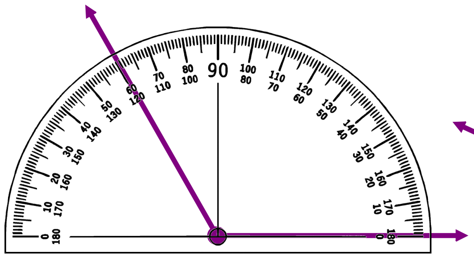


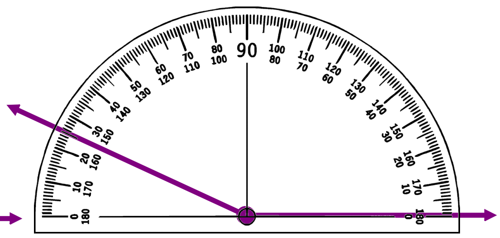


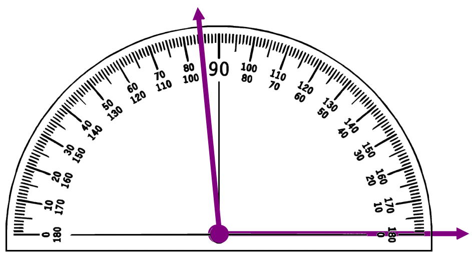


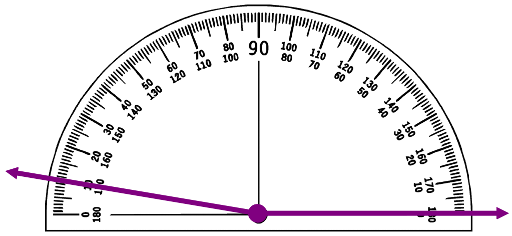


2. Use a ruler and a protractor.
   Draw an obtuse angle with each measure.
   a) 120°   b) 155°   c) 95°   d) 170°

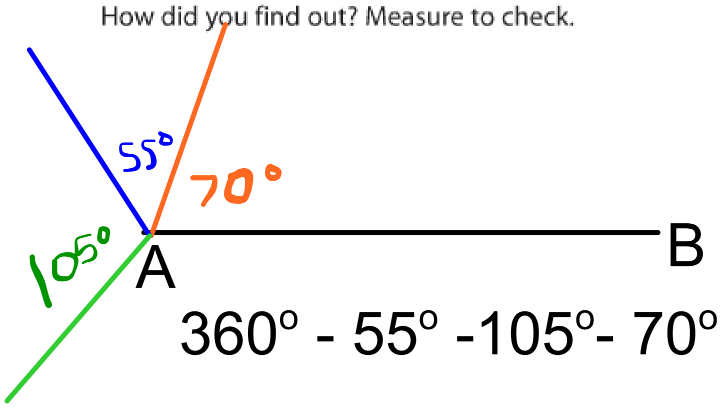


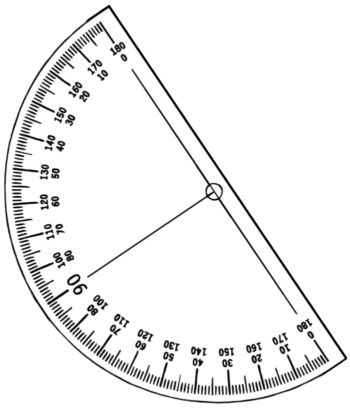






3. Use a ruler and a protractor.
Draw a horizontal line segment AB.
Each angle you draw should have its vertex at A.
   a) Using AB as one arm, draw a 70° angle.
   b) Use the line you drew in part a as one arm of another angle. Draw a 55° angle.
   c) Use the line you drew in part b as one arm of another 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.





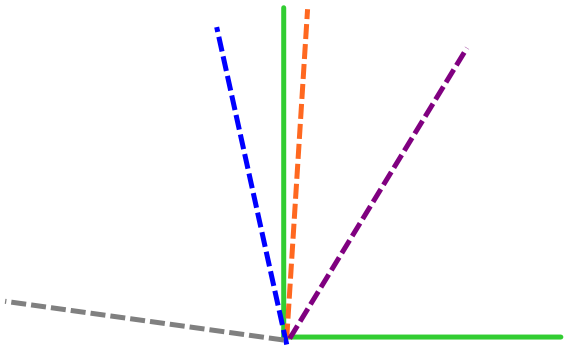
$360^o - 55^o - 105^o - 70^o$

$= 360^o - 230^o$

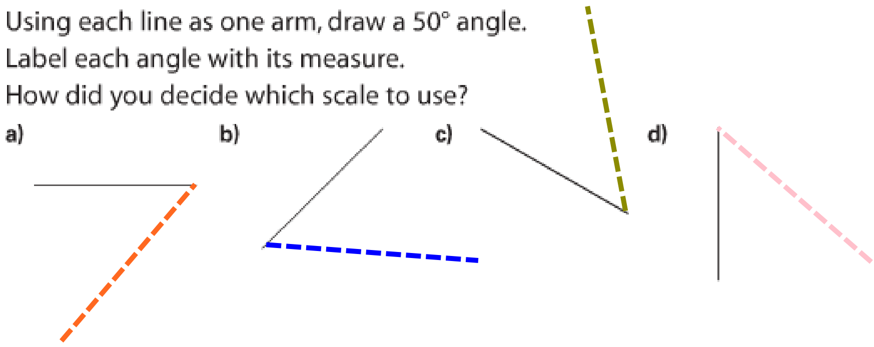
$= 130^o$

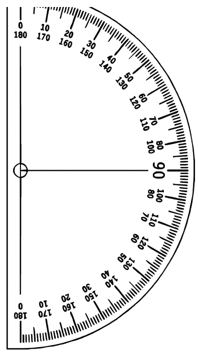
4. Use only a ruler to draw an angle that you think measures:
   a) 90°
   b) a little less than 90°
   c) about 45°
   d) a little more than 90°
   e) a little less than 180°

   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?



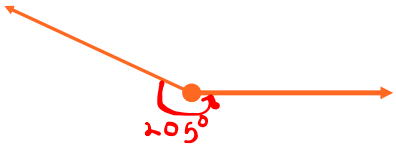


6. Use a ruler and a protractor.
Draw an angle with each measure.

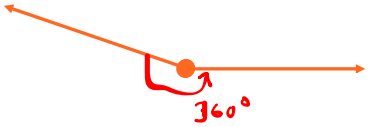
a) 205° b) 200° c) 270°
d) 320° e) 350° f) 300°

All reflex since bigger than 180°

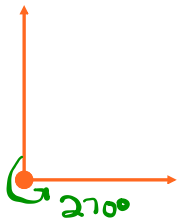
a) inside = 360° - reflex
= 360° - 205°
= 155°



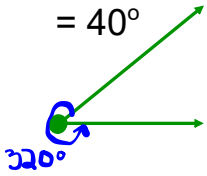
b) inside = 360° - reflex
= 360° - 200°
= 160°



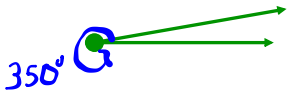
c) inside = 360° - reflex
= 360° - 270°
= 90°



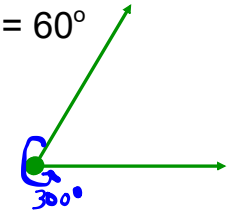
d) inside = 360° - reflex
= 360° - 320°
= 40°



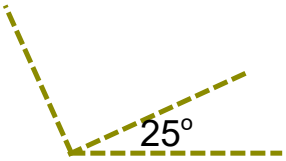
e) inside = 360° - reflex
= 360° - 350°
= 10°

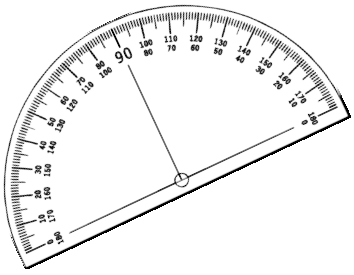


f) inside = 360° - reflex
= 360° - 300°
= 60°



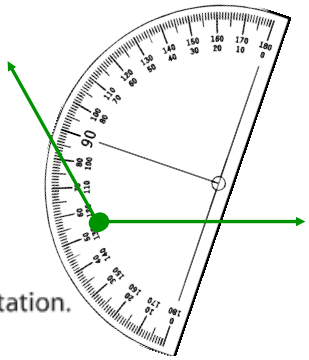
7. Draw an acute angle. Without using a protractor, draw an angle that is 90° greater than the angle you drew. Measure the angle with a protractor to check. Explain how you drew the angle.



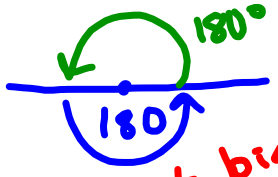


8. a) Without using a protractor, draw a 90° angle.
   How can you use this angle to draw a 180° angle?
   How are the two angles related?
   b) Without using a protractor, draw a 180° angle.
   How can you use this angle to draw a 90° angle?
   A 45° angle?
   How are the three angles related?
   Show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



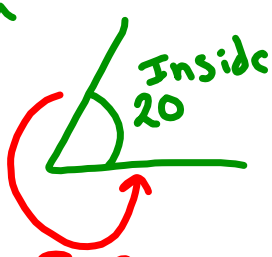
9)



Not bigger than 180° so No

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.

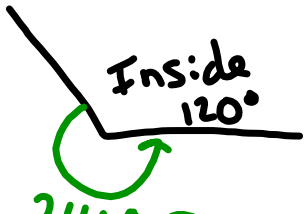
#1a



Reflex 340°

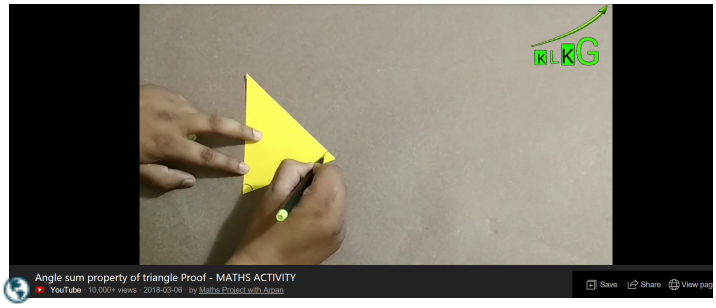
Yes

b)



240° Reflex

Yes

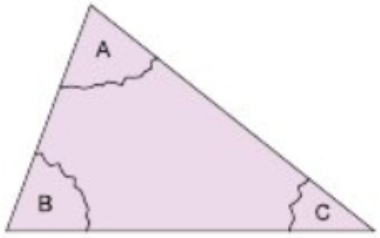


Explore

You will need a ruler, scissors, and a protractor.

➤ Draw a triangle to match each description below:
- a triangle with one right angle
- a triangle with one obtuse angle
- a triangle with all acute angles

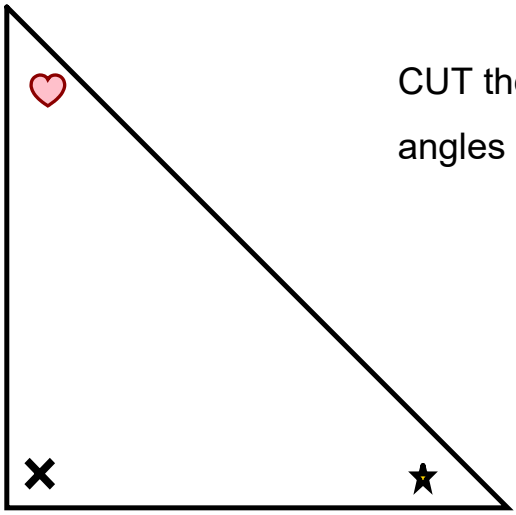
Use a protractor to measure the angles in each triangle.
Record the measures in a table.



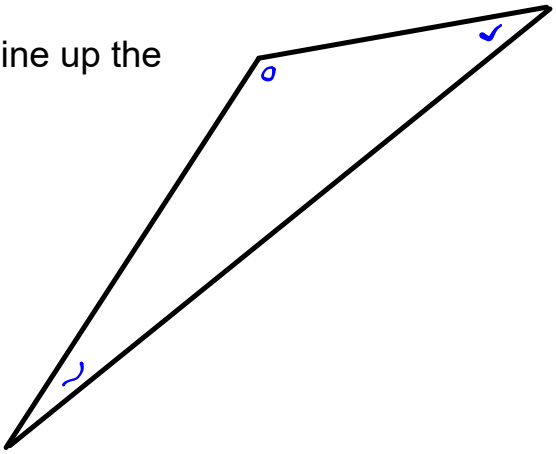
➤ Cut out one of the triangles. Cut off its angles.
Place the vertices of the three angles together so adjacent sides touch. What do you notice?

➤ Repeat the activity with the other two triangles.
What can you say about the sum of the angles in each triangle?

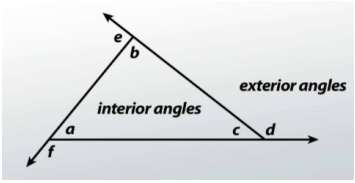
➤ Use the measures in your table.
Find the sum of the angles in each triangle.
Does this confirm your results from cutting off the angles?
Explain.



CUT these out and line up the angles side by side



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

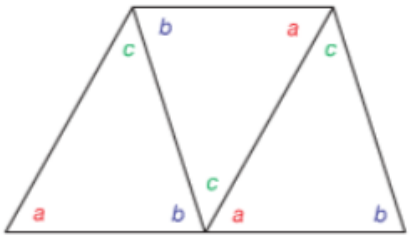


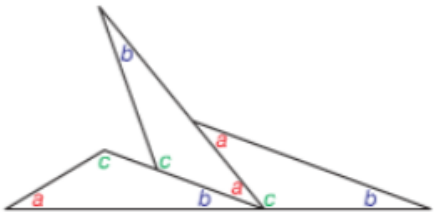
The symbol ∠A refers to angel A

MUST STUDY

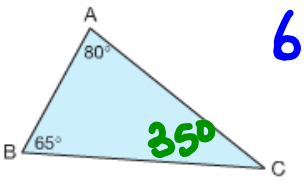
The sum of the angles in a triangle is 180° (a straight angle)

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





➤ We can use the sum of the angles in a triangle to find the measure of the third angle in this triangle.



65+80
145
180−145
=35°

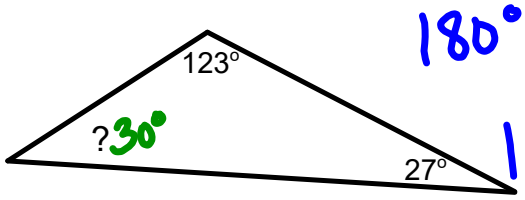
We often refer to an angle using the letter of its vertex. For example, the 80° angle in triangle ABC is ∠A.

The sum of the angles in a triangle is 180°.
So, $\angle A + \angle B + \angle C = 180°$
Since $\angle A = 80°$ and $\angle B = 65°$,
$80° + 65° + \angle C = 180°$ Add the angles.
$145° + \angle C = 180°$

Solve the equation by inspection.
Which number do we add to 145 to get 180?
The measure of ∠C is 35°.

To check, we can find the sum of the 3 angles:
$\angle A + \angle B + \angle C = 80° + 65° + 35°$
$= 180°$
So, the answer is correct.

Find the missing angle (show work)



Given Angles

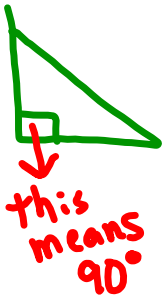
$180° - 123° + 27°$

$180° - 150°$

$30°$

Class/Homework

Page 148-149



~~#1 (No dot paper just paper), #2, #3, #4~~

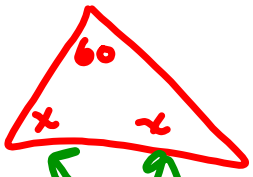
#2

#3

180° - Given Angles

180° - (x + y)

sum of given



add to 120 and are the same

180 - Given

180 - 60

= 120

Both have to be the same

120 ÷ 2

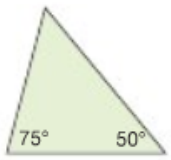
= 60°

Practice

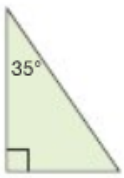
1. Draw 3 different triangles on dot paper. Measure and record each angle. Find the sum of the measures of the angles for each triangle.

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

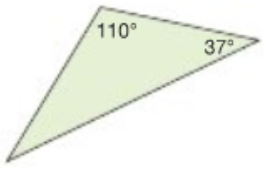
a)



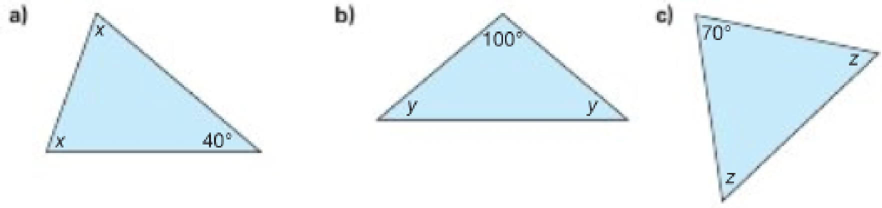
b)



c)



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.



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°

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?

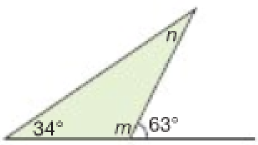
   Explain your thinking.
   Use pictures and words.

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

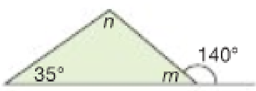
TIP

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

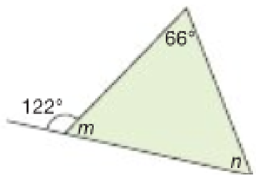
a)



b)

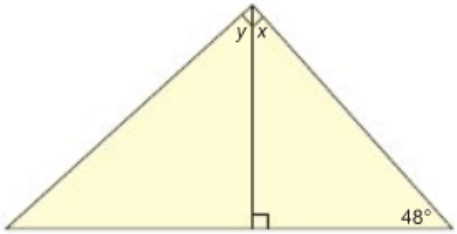


c)

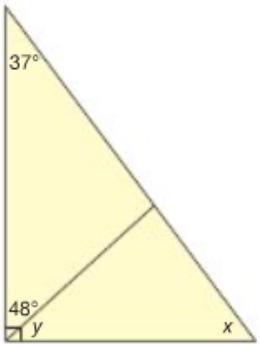


9. Find the measures of the angles labelled *x* and *y*.
Show your work. Explain the strategy you used.

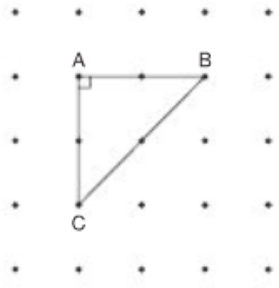
a)



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