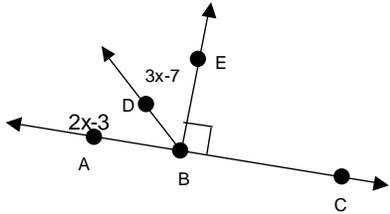


3-7-4 Geometry with Algebra

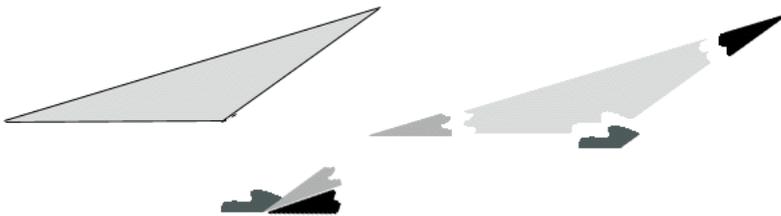
The following will provide practice with both geometry vocabulary and algebra. Think about what the picture or vocabulary means and make the equation accordingly.



Examples: Find x . The two angles are complementary and must add to 90 degrees.

$$2x-3 + 3x-7 = 90$$

When this is worked out x is 20. The angles could be found by plugging the 20 into the expression for each angle.



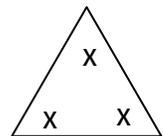
The angles in a triangle add to 180 degrees. Cut out any triangle. Tear off the angles and arrange them next to each other as shown. This works with any triangle.

Example: Find the measure of the angles in an equilateral triangle. First draw a picture. An equilateral triangle has all sides the same length and all angles the same size.

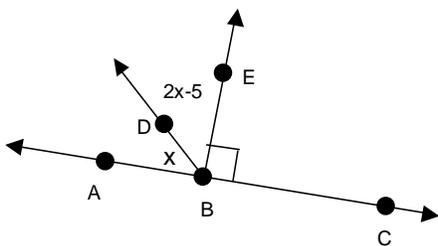
$$x+x+x=180$$

$$3x = 180$$

$$x = 60$$



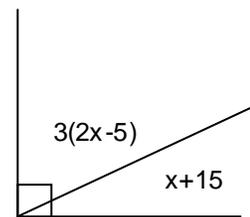
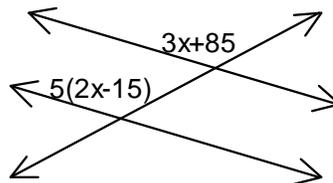
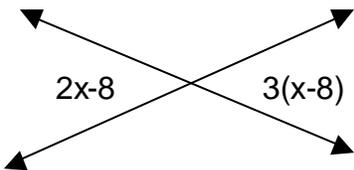
The angles in an equilateral triangle are each 60 degrees.

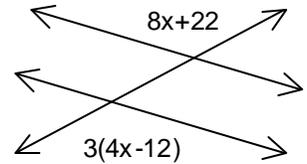
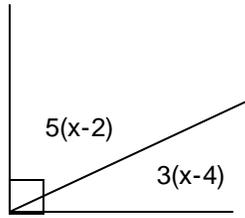
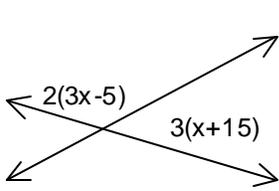


Practice:

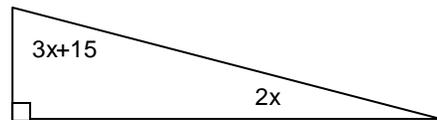
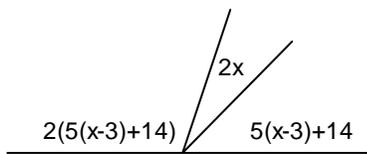
- Find x . Remember the complementary angles add to ninety degrees.
- One angle in a set of supplementary angles is 5 more than twice the other. Find the measurement of the angles.

c) Solve for x in each of the following diagrams. Assume lines that appear parallel are parallel.





- d) The angles on any triangle add up to 180 degrees. Find the measure of each angle if the triangle is isosceles with one 40-degree angle.
- e) What is the measure of the angles in an equilateral triangle? (all sides and all angles equal)
- f) One angle of a triangle is three less than twice another. The other is 4 times the sum of the small angle and 2. What are the angle measurements?
- g) One vertical angle is a number plus 12. The other 40 less than is three times the same number. What is the number?
- h) What is the measure of the other two angles in a right isosceles triangle? (Angles in any triangle add to 180E.)

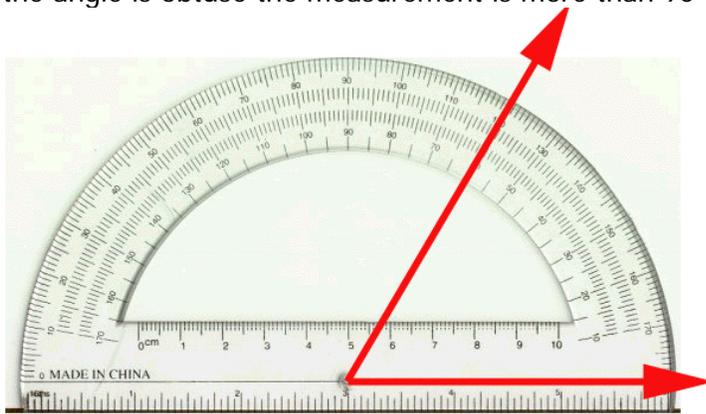


- i) Find x.



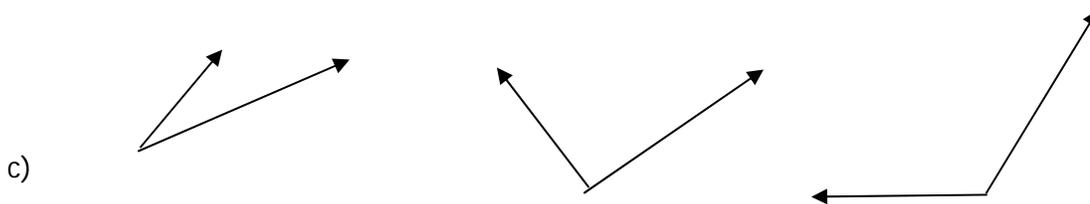
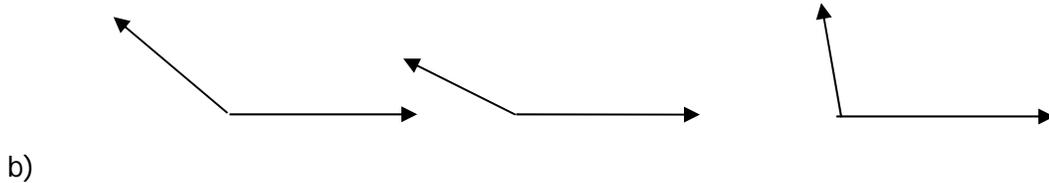
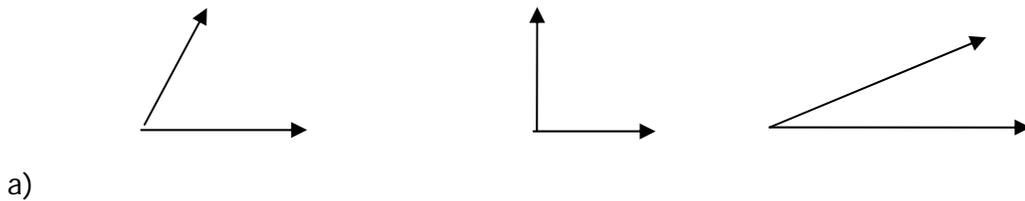
Use a protractor to measure angles. A protractor has a notch or hole to mark where the vertex of the angle must be. One ray of an angle is along the line marked 0 degrees. Most times this is not along the bottom of the protractor, but in line with the hole for the vertex. The size of the angle is read from the numbers on the curved part of the protractor.

Students sometimes have a hard time knowing which number to read of the two that the angle touches. There is an easy way to decide. If the angle is acute it is the measurement that is less than 90 degrees. If the angle is obtuse the measurement is more than 90 degrees.



The angle is positioned with the vertex on the hole and one ray along the zero degree line. The numbers the other side of the angle touches are 60 degrees and 120 degrees. Which measurement is correct? Sometimes you must use a straight edge to extend the angle farther than is presented in the original problem to see exactly where the line hits the protractor.

Practice: Measure the following angles.



d) Draw a 65E angle.

Draw a 32E angle.

Draw a 15E angle.

e) Draw a 120E angle.

Draw a 155E angle.

Draw a 175E angle.