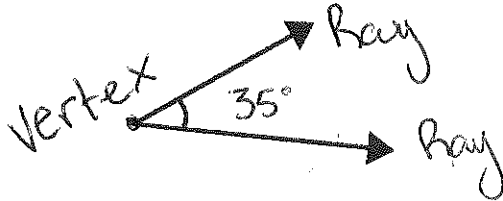


Estimating, Measuring & Describing Angles

An angle is formed when two rays meet at a point called a vertex. Angles are measured in degrees ($^{\circ}$), and can be measured with a protractor. There are 360° in a circle. A straight line is 180° .



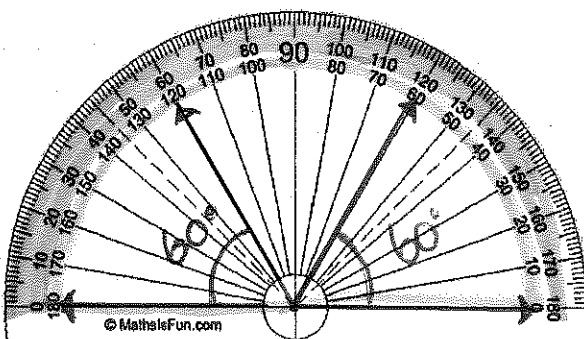
Angles are classified as follows:

Acute angle – measure is between 0° and 90°	
Right angle – measure is exactly 90° ; the two rays are perpendicular to each other	
Obtuse angle – measure is between 90° and 180°	
Straight angle – measure is exactly 180°	
Reflex angle – measure is between 180° and 360° Measure small angle and subtract from 360°	

Estimating Angles:

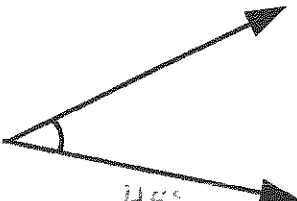
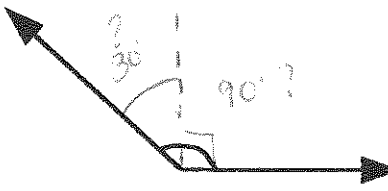
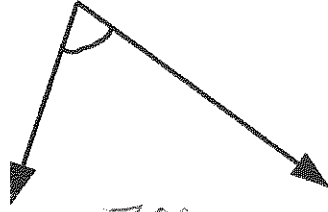
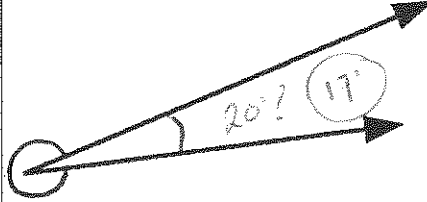
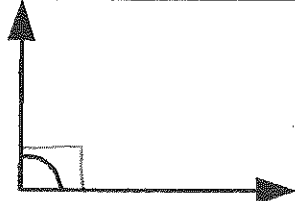


Using a Protractor:



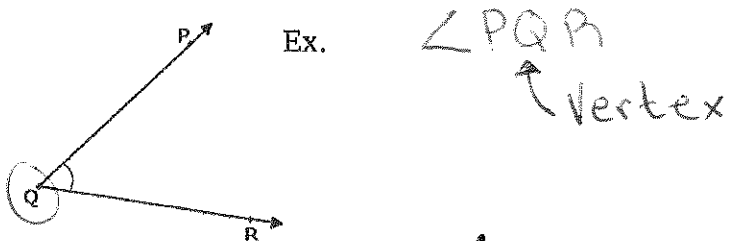
1. Align center point with vertex of angle
2. Line up the 0° on the bottom of the protractor with the bottom ray of the angle
3. Read the number the second ray passes through on the same scale as the 0°

Practice: Estimate, classify and measure each angle:

 Estimate: <u>45°</u> Type: <u>Acute</u> Measure: <u>37°</u>	 Estimate: <u>30 + 90 = 120°</u> Type: <u>Obtuse</u> Measure: <u>140°</u>	 Estimate: <u>70°</u> Type: <u>Acute</u> Measure: <u>72°</u>
 Estimate: <u>140° 150°</u> Type: <u>Obtuse</u> Measure: <u>152°</u>	 Estimate: <u>360 - 20 = 340°</u> Type: <u>Reflex</u> Measure: <u>360 - 17 = 343°</u>	 Estimate: <u>90°</u> Type: <u>Right</u> Measure: <u>90°</u>

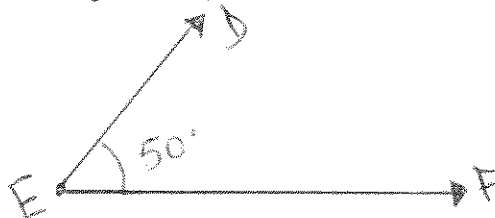
Naming Angles:

Angles are names using letters for each end of the rays and the vertex.

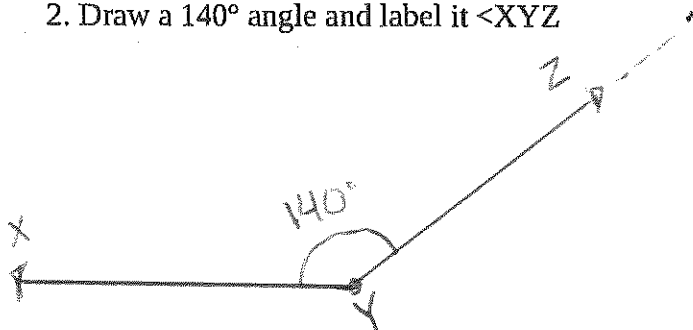


Practice:

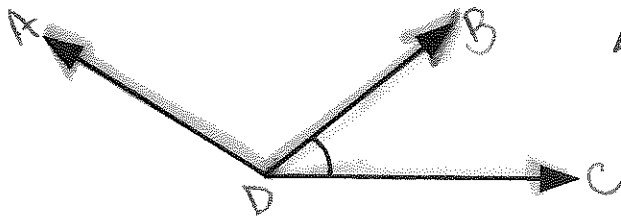
1. Draw a 50° angle and label it $\angle DEF$



2. Draw a 140° angle and label it $\angle XYZ$



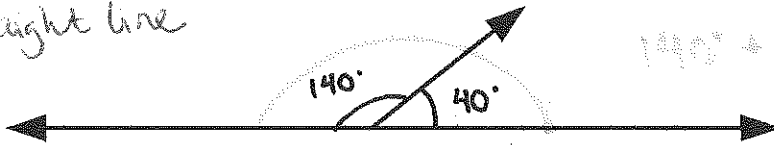
Adjacent Angles – Angles that share a vertex and one common ray.



$\angle ADB$ is adj to $\angle BDC$
Share vertex D
Share Ray $\overrightarrow{DB}$

Supplementary Angles – Angles with a sum of 180°

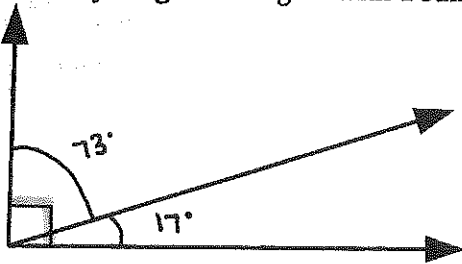
Straight line



$$140^\circ + 40^\circ = 180^\circ$$

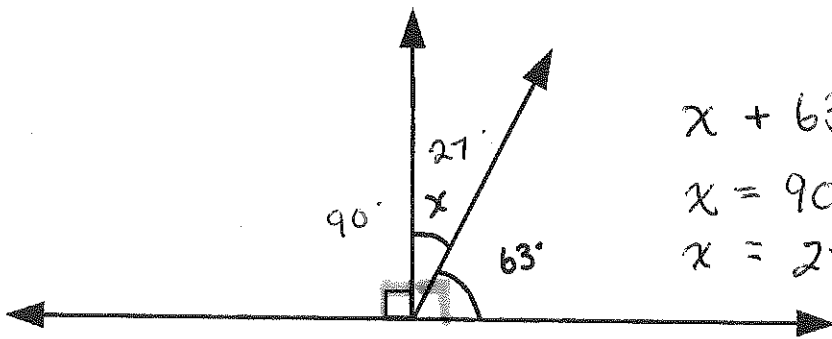
Complementary Angles – Angles with a sum of 90°

Corner



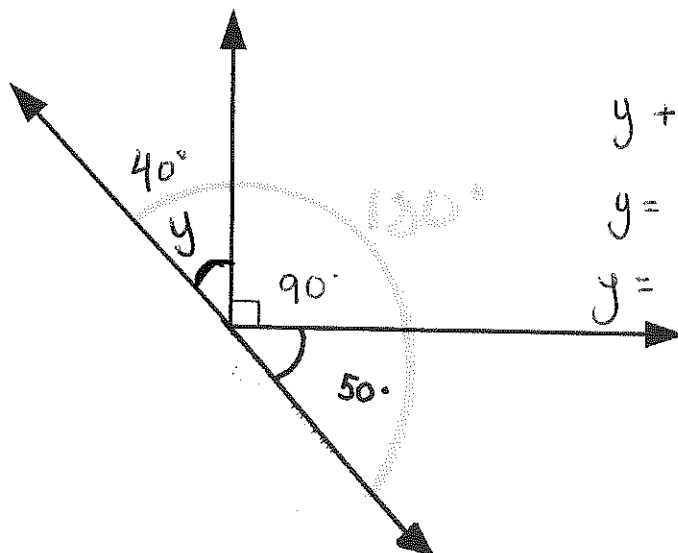
$$73^\circ + 17^\circ = 90^\circ$$

Practice: Without using a protractor label the missing angles in each diagram:



$$\begin{aligned} x + 63 &= 90^\circ \\ x &= 90 - 63 \\ x &= 27^\circ \end{aligned}$$

$$x + 90 + 63 = 180$$

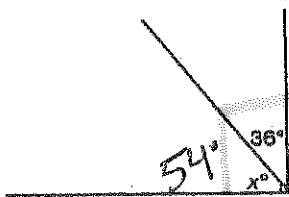


$$y + 90 + 50 = 180$$

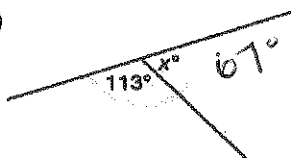
$$y = 180 - 90 - 50$$

$$y = 40^\circ$$

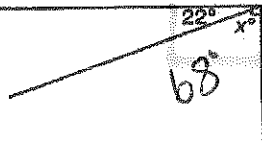
a)



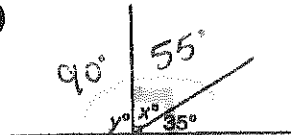
d)



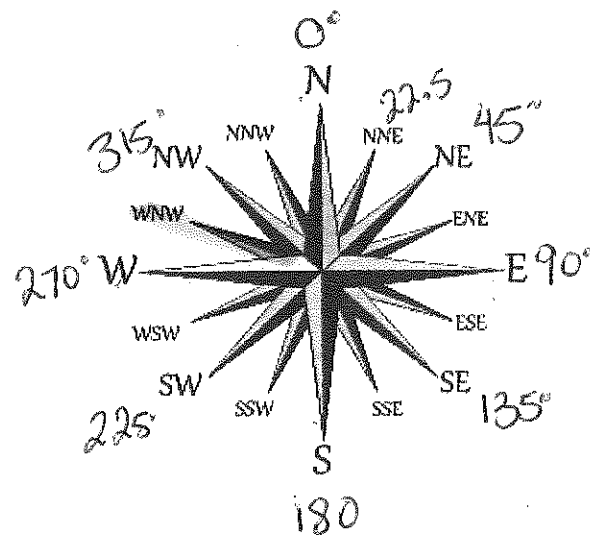
b)



e)



The compass rose is illustrated here. It shows many of the common bearings you might have heard of. You can see that east has a bearing of 90° , south has a bearing of 180° , and west has a bearing of 270° . In between each of these cardinal directions, the bearings are half of the 90° .



Each of the directions shown on this compass rose has a measure of 22.5° . $\frac{1}{4}$ of 90

Through addition and subtraction, all other bearings can be found.

Example: What is the true bearing of a boat heading southwest? = 225°

WNW?

$$270 + 22.5 = 292.5^\circ$$

Pg 186-187 # 1-5

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1-4

LO Baffle Tickets!