



# Use a Protractor to Measure Angles

Let's use some tools to measure angles.

## Warm-up

### True or False: There's Something about 45

Decide if each statement is true or false. Explain your reasoning.

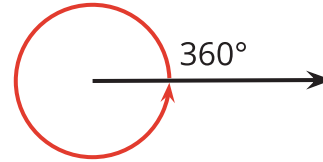
- $2 \times 45 = 6 \times 15$
- $4 \times 45 = 2 \times 90$
- $3 \times 45 = 180 - 90$
- $6 \times 45 = 45 + 90 + 135$



## Activity 1

### How Large Is a $1^\circ$ Angle?

1. A ray that turns all the way around its starting point has made a full turn or has turned  $360^\circ$ .

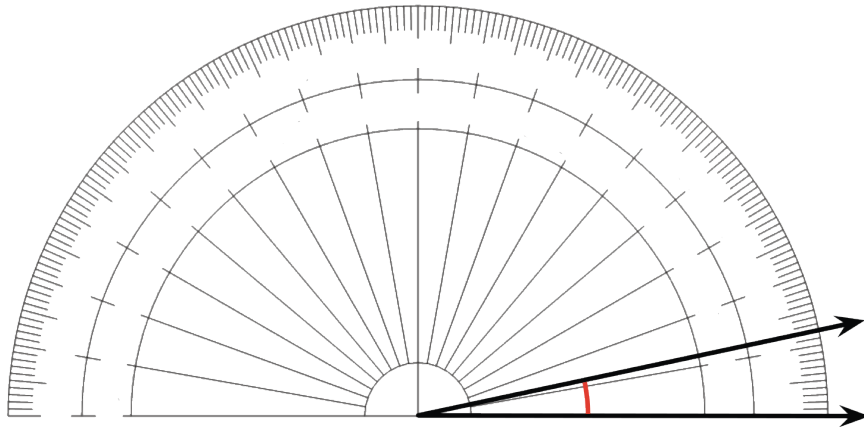


What fraction of a full turn is each of the following angle measurements?

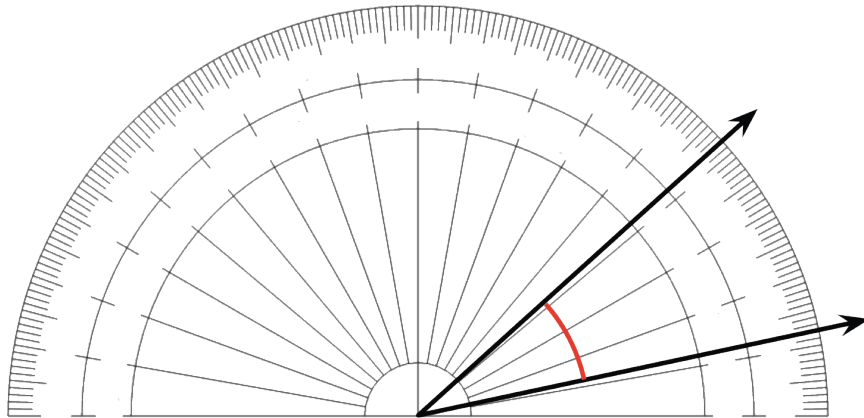
- a.  $120^\circ$
  - b.  $60^\circ$
  - c.  $45^\circ$
  - d.  $30^\circ$
  - e.  $10^\circ$
  - f.  $1^\circ$
2. Your teacher will give you a **protractor**, a tool for measuring the number of degrees in an angle.
    - a. How is  $1^\circ$  shown on the protractor?
    - b. How many  $1^\circ$  measurements do you see?

3. A protractor with no numbers has been placed over an angle.
- The center of the protractor is lined up with the vertex of the angle.
  - The straight edge of the protractor lines up with a ray of the angle.

How many degrees is this angle? Explain how you know.



4. An angle contains thirty  $1^\circ$  angles. How many degrees is this angle?

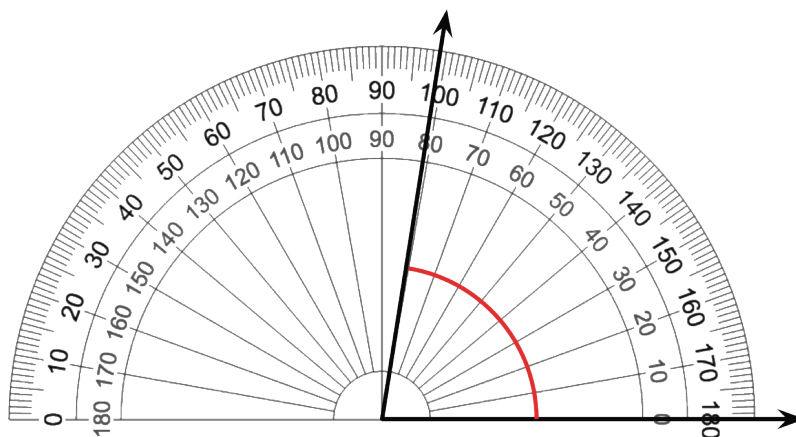


## Activity 2

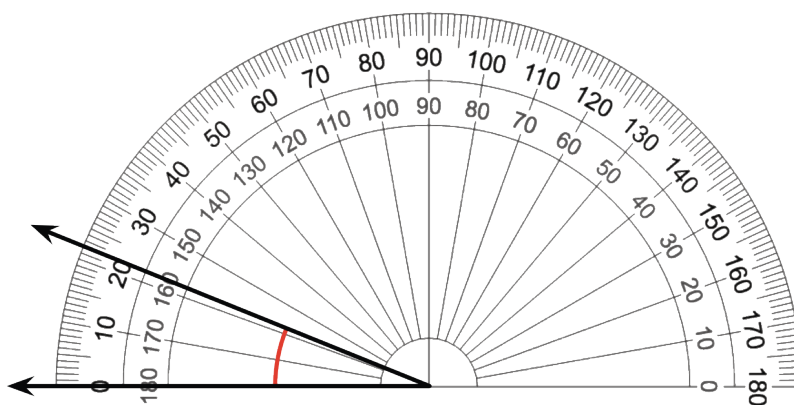
### Use a Protractor

1. Here are 4 angles. A protractor has been placed over each angle. Measure the size of each angle in degrees.

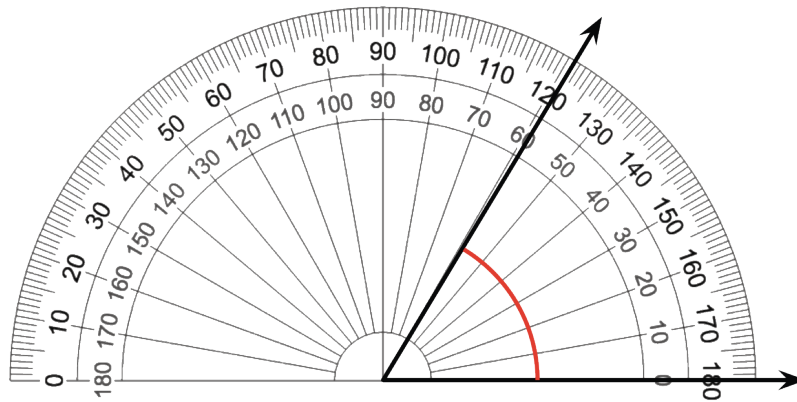
a.



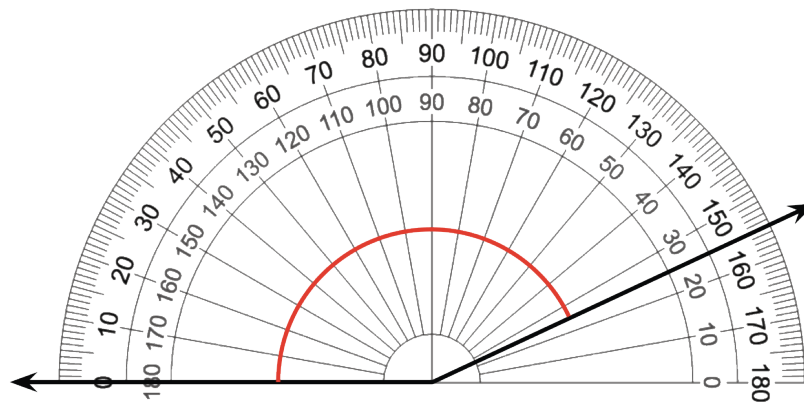
b.



c.



d.



2. Elena and Kiran measure an angle with a protractor. Elena says the angle is  $80^\circ$ . Kiran says the angle is  $100^\circ$ . Why are the measurements different? Which measurement is correct? Explain your reasoning.

