

## Grade 4 Unit 7

### Lesson 9

CC BY 2021 Illustrative Mathematics®

## Unit 7 Lesson 9: Use a Protractor to Measure Angles

### WU True or False: There's Something about 45 (Warm up)

#### Student Task Statement

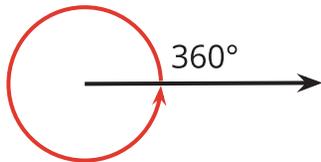
Decide if each statement is true or false. Be prepared to explain your reasoning.

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

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

#### Student Task Statement

1. A ray that turns all the way around its endpoint and back to its starting place 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?

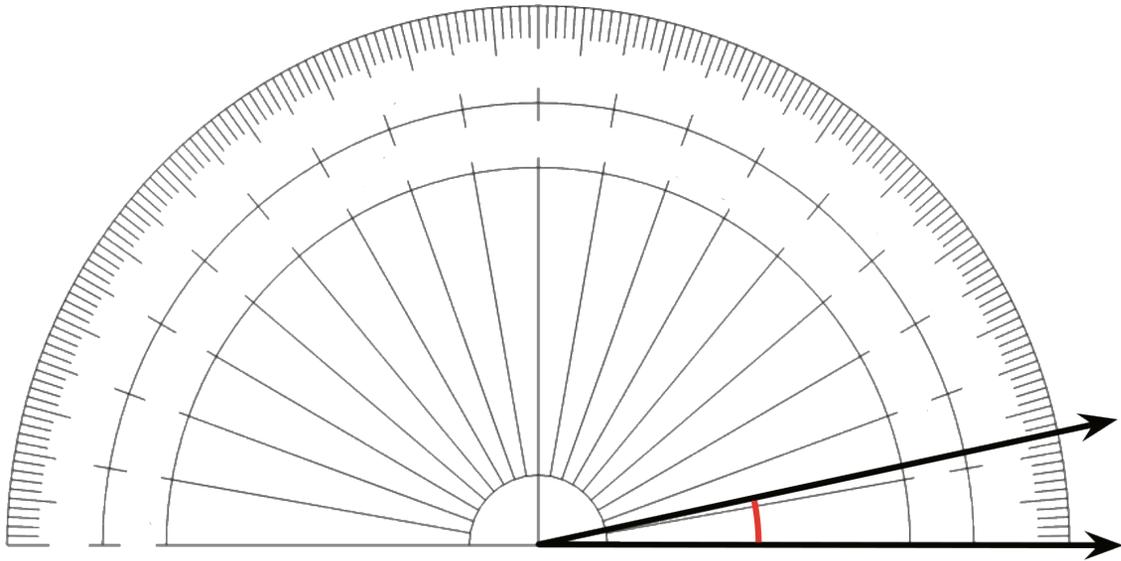
---

b. How many  $1^\circ$  measurements do you see?

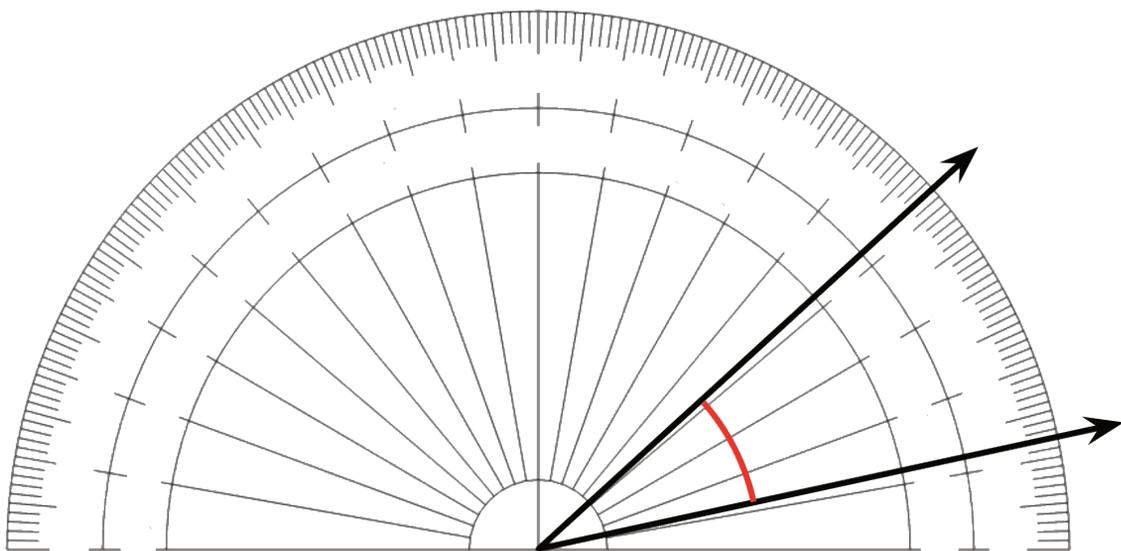
3. A protractor with no numbers has been placed over an angle.

- The center of the protractor is lined up with the vertex of the angle.
- The straight edge of the protractor is lined 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, as shown. How many degrees is this angle?



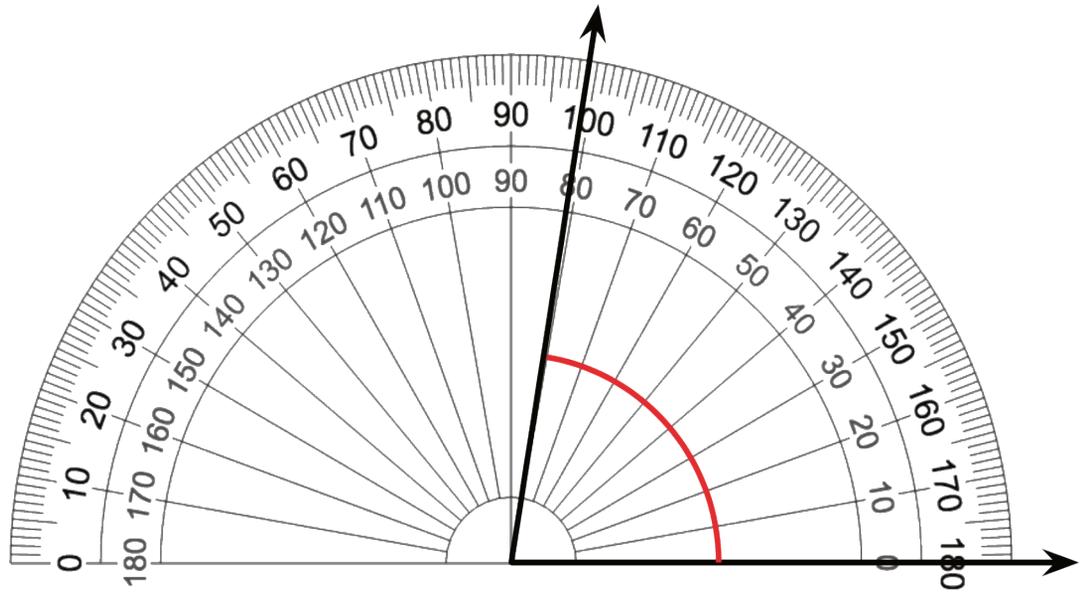
---

## 2 Use a Protractor

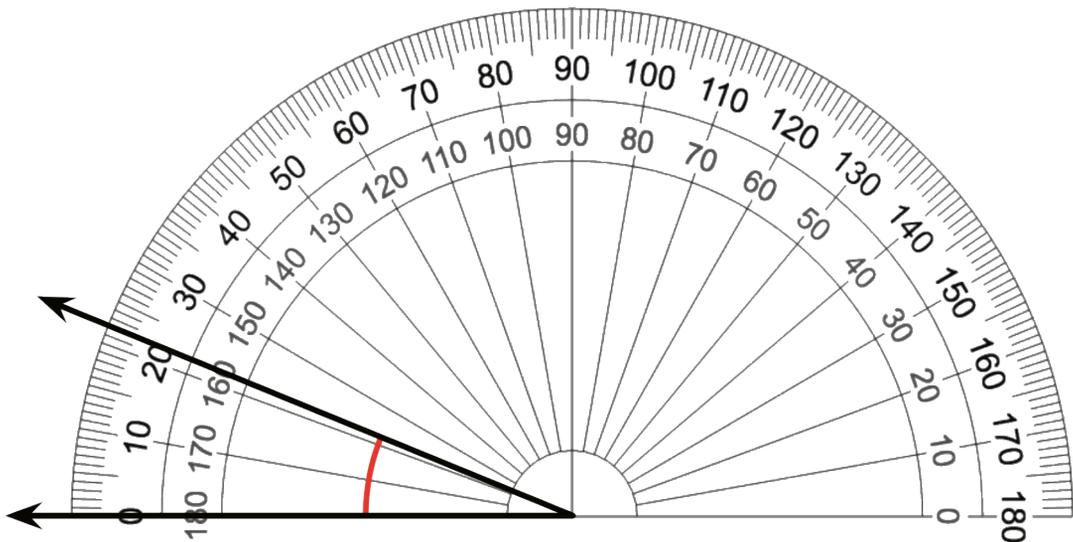
### Student Task Statement

- Here are four angles whose sizes you may have estimated earlier. A protractor has been placed over each angle. Measure the size of each angle in degrees.

a.

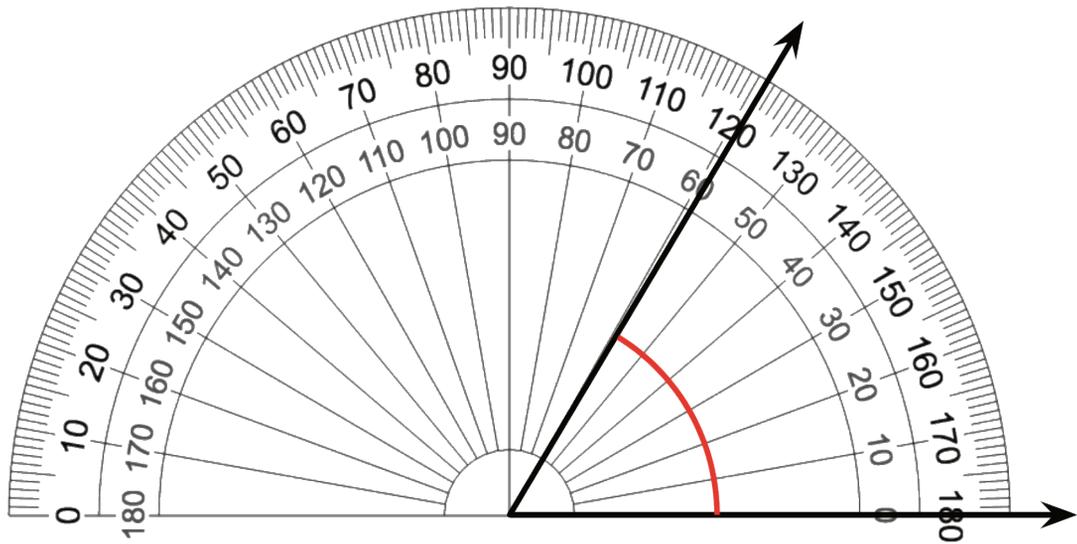


b.

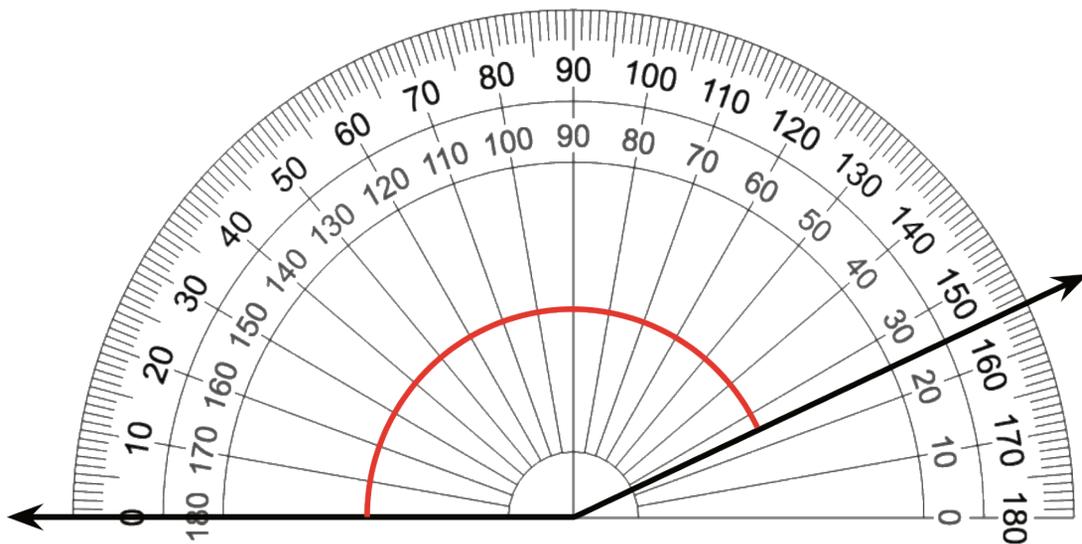


c.

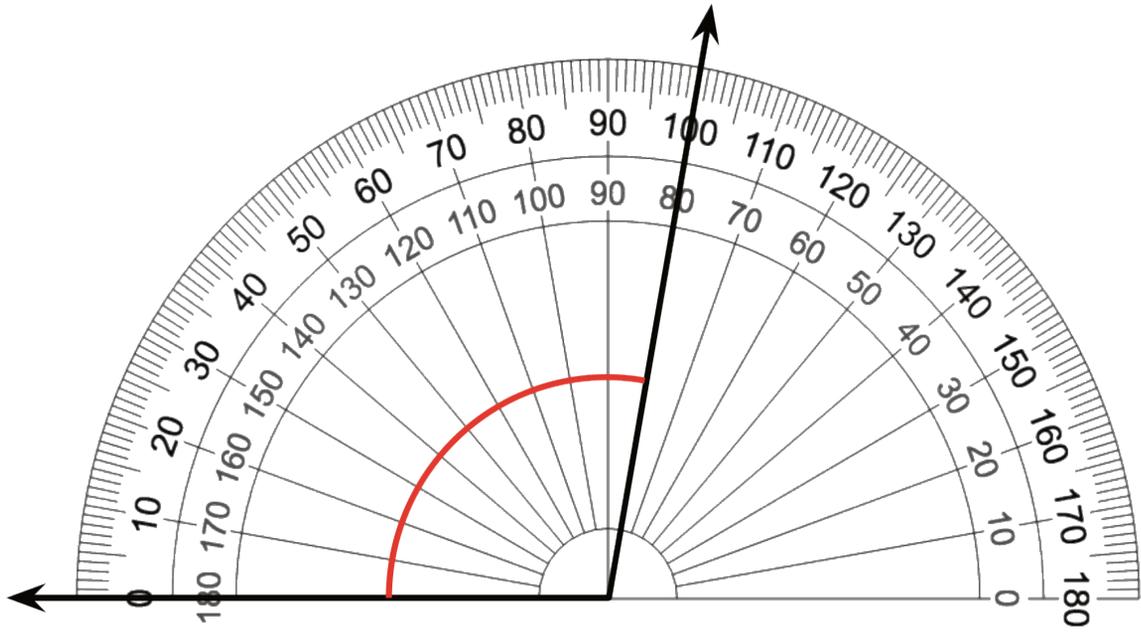
---



d.



2. Elena and Kiran are measuring an angle with a protractor. Elena says the angle is  $80^\circ$ . Kiran says it shows  $100^\circ$ . Why might they end up with different measurements? Which one is correct? Explain your reasoning.



Images for Activity Synthesis

