## Unit 7 Lesson 11: Use a Protractor to Draw Angles

### WU Estimation Exploration: Long Hand and Short Hand (Warm up)

#### Student Task Statement

How many degrees is the angle formed by the long hand and the short hand of the clock?



Make an estimate that is:

|  |  |  |
| --- | --- | --- |
| too low | about right | too high |
| $$ | $$ | $$ |

### 1 Draw These Angles

#### Student Task Statement

1. Draw a line that is neither vertical nor horizontal. Put a point somewhere on that line. Use your protractor to draw a perpendicular line through that point. Be as precise as possible. (No folding this time!)
2. Here is a ray that starts at point $M$.
* 
* Use a protractor to draw:
	1. A ray starting at point $M$ to create a $40^{∘}$ angle.
	2. Another ray starting at point $M$ to create a $20^{∘}$ angle.
	3. One more ray starting at point $M$ to create a $95^{∘}$ angle. Label each angle with its measurement.
1. In your drawing, there should be one angle that is not labeled with a measurement and is larger than $180^{∘}$ . Label the angle with an arc. How many degrees is this angle? Be prepared to explain how you know.

### 2 Angles Made to Order

#### Student Task Statement

Your teacher will give you some blank cards. Label them a–d.

1. On each card, draw an angle that meets one requirement. Use a ruler and a protractor.
	1. an angle that is less than $35^{∘}$
	2. an angle that is between $35^{∘}$ and $80^{∘}$
	3. an angle that is greater than $80^{∘}$ but less than $120^{∘}$
	4. an angle that is greater than $120^{∘}$ but less than $180^{∘}$
2. Trade cards with your partner.
	1. Measure and record each angle your partner drew. Check to make sure each angle meets the requirement.
	2. If a requirement is not met, return it to your partner so it can be corrected. Save the cards for the next lesson.

If you have time:

1. Create a drawing that shows several angles. Then, write some descriptions of your drawing. Be as specific as possible.
2. Ask a partner to recreate the drawing based on your descriptions. Does their drawing turn out as you had drawn? If not, adjust your descriptions and ask them to try again.



© CC BY 2021 Illustrative Mathematics®