

Lesson Two – How to Read a Ruler and Tape Measure

Lesson Overview

In this lesson, participants will learn the basics of how to read a ruler and tape measure.

Lesson Objectives

After completing this lesson, participants will be able to:

- Identify standard units of measure
- Read fractions on a standard ruler and tape measure
- Read a metric ruler and tape measure
- Convert metric into standard and vice versa

Lesson at a Glance

Activity	Materials	Preparation	Approximate class time
FOCUS	• <i>Fraction War cards</i>	1. Print/Photocopy <i>Fraction War</i> (one per group). 2. Cut out a deck of cards for each group. *Laminating the cards will save you work in the long run.	10-15 minutes
LEARN	• <i>How to Read a Ruler and Tape Measure Guided Note Packet</i> • <i>How to Read a Ruler and Tape Measure Guided Note Packet – Answer Key</i> • <i>How to Read a Ruler and Tape Measure</i> slide presentation	1. Print/Photocopy <i>How to Read a Ruler and Tape Measure Guided Note Packet</i> (one per participant). 2. Prepare to show the <i>How to Read a Ruler and Tape Measure</i> slide presentation.	40 minutes
REVIEW	• <i>How to Read a Ruler and Tape Measure Exit Ticket</i> • <i>Plickers Cards</i> • Smart Device (instructor use only)	1. Create a Plickers account. 2. Input participant names. 3. Input multiple-choice questions 4. Print/photocopy <i>Plickers Cards</i> (one per participant).	5-10 minutes

Lesson Two – How to Read a Ruler and Tape Measure

FOCUS: How to Read a Ruler and Tape Measure

10-15 minutes

Purpose:

To be successful in the lesson, participants must understand the value of fractions, specifically halves, fourths, eighths, and sixteenths. This activity will foster friendly competition and help participants review fractions in these denominations. The more familiar participants are with fractions, the easier reading a ruler or tape measure will be.

Materials:

- *Fraction War*

Facilitation Steps:

1. Have participants break off into pairs.
2. Pass out 28 pre-cut cards to each pair.
3. The participants will shuffle the cards and select 14 cards each, creating a face-down pile.
4. Each participant will take the top card off of their deck and place it in the middle of the desk.
5. The participant with the highest card keeps both cards, adding them to the bottom of their pile.
8. The process is repeated until one player has all of the cards and is declared the winner.
9. In the case of equivalent fractions, a “fraction war” will ensue. In a “fraction war,” an additional card will be placed face down and another card will be flipped in the center. The higher of the cards will take all of the cards in the center.

Fraction War

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Tip for instructors:

- Laminating the cards will make them more durable and long-lasting.

$\frac{3}{4}$	$\frac{3}{16}$	$\frac{1}{2}$	$\frac{1}{8}$
$\frac{5}{8}$	$\frac{7}{16}$	$\frac{1}{4}$	$\frac{3}{8}$
$\frac{7}{18}$	$\frac{9}{16}$	$\frac{11}{16}$	$\frac{13}{16}$
$\frac{9}{8}$	$1\frac{3}{4}$	$\frac{11}{8}$	$\frac{7}{4}$
$\frac{17}{16}$	$\frac{5}{4}$	$\frac{19}{16}$	$\frac{9}{4}$
$\frac{13}{8}$	$\frac{15}{8}$	$\frac{3}{2}$	$\frac{5}{2}$
1	2	$\frac{11}{4}$	$\frac{17}{8}$

Lesson Two – How to Read a Ruler and Tape Measure

LEARN: How to Read a Ruler and Tape Measure

40 minutes

Purpose:

Participants will follow the slide presentation with the guided note packet provided and work through several example problems. Participants will learn about the standard units of measure on a ruler and tape measure, and how to read them.

Materials:

- *How to Read a Ruler and Tape Measure* slide presentation
- *How to Read a Ruler and Tape Measure Guided Note Packet*
- *How to Read a Ruler and Tape Measure Guided Note Packet – Answer Key*

Facilitation Steps:

1. Walk through the *How to Read a Ruler and Tape Measure* slide presentation (Slides #1-7). Lead a discussion using the tips in the notes section of the slide presentation.
2. Participants should follow along and take notes in the *How to Read a Ruler and Tape Measure Guided Notes Packet*.
3. Take a break from the notes to address any questions or concerns that participants may have.
4. Continue on with the *How to Read a Ruler and Tape Measure* slide presentation (Slides #8-13).
5. Participants should follow along, filling in the *How to Read a Ruler and Tape Measure Guided Notes Packet*.

Name: _____

Date: _____

How to Read a Ruler and Tape Measure Guided Note Packet

Standard units of measure:

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Steps to using a ruler and tape measure:

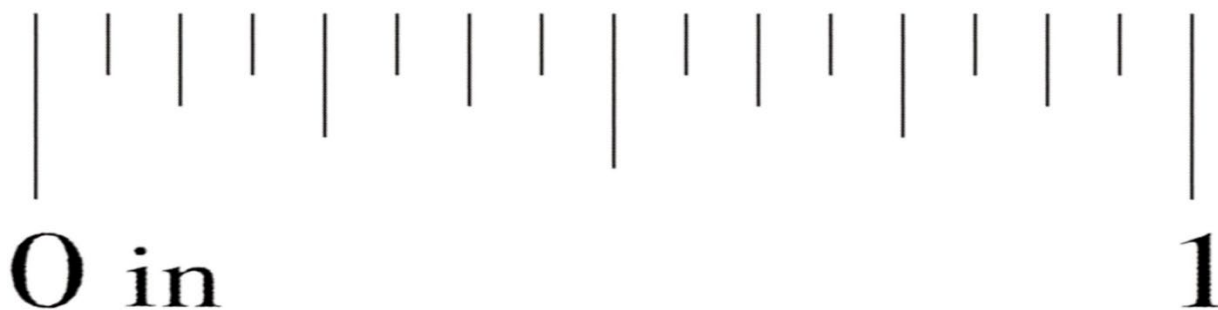
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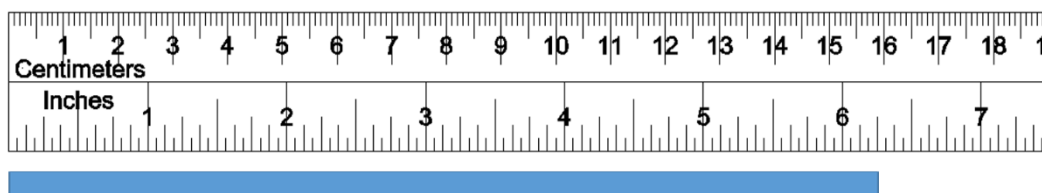
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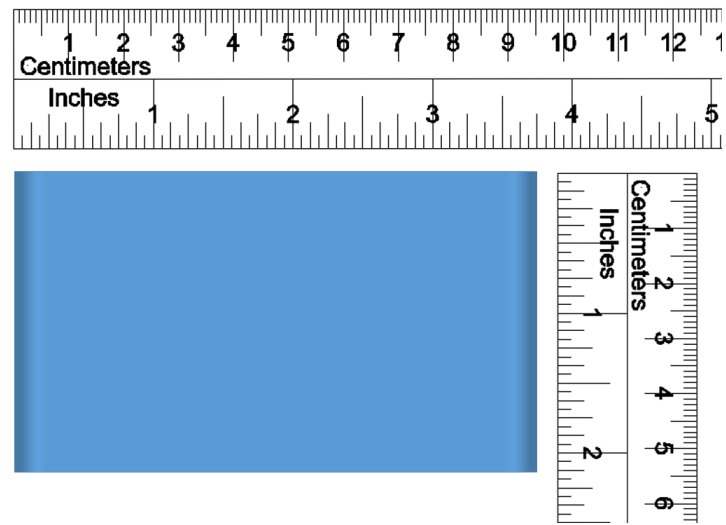
What's in an inch?



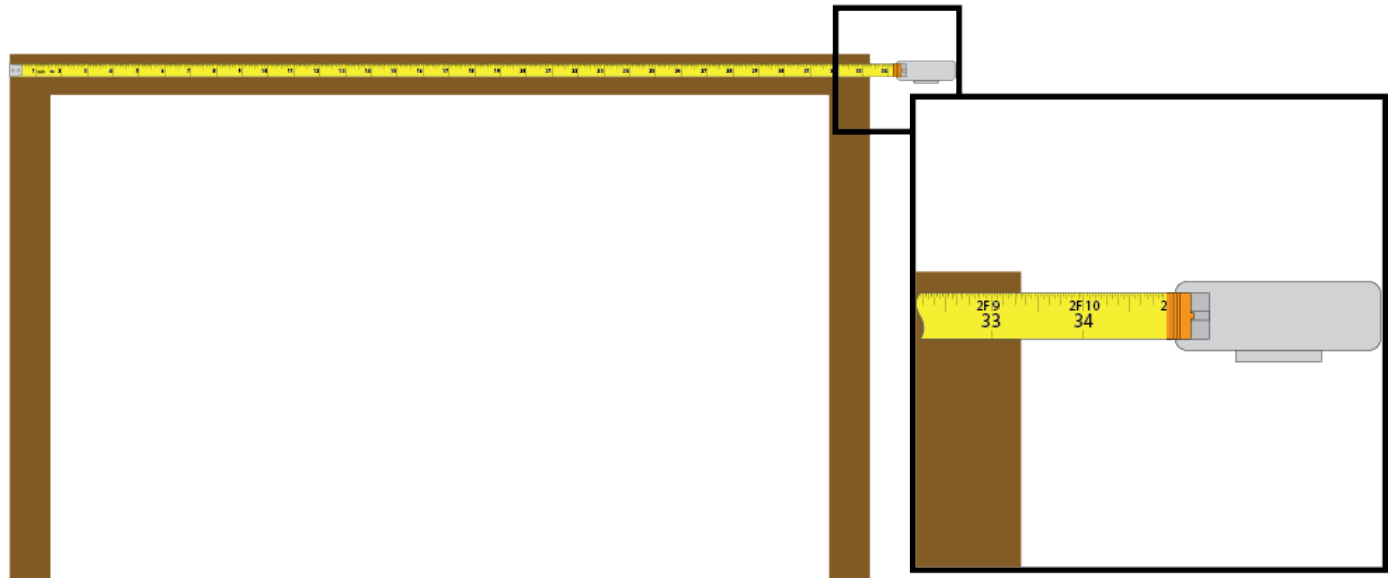
Example: How long is the rectangle below?



Practice: What are the dimensions of the rectangle below?



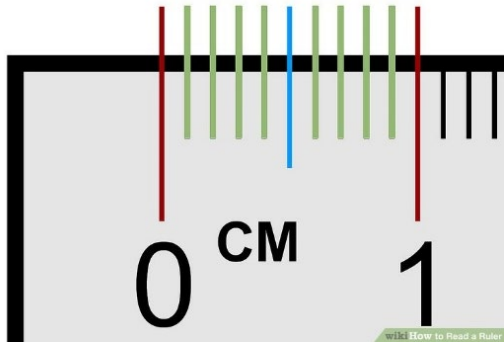
Application: A carpenter is measuring a door frame. What is the width of the door shown below (not drawn to scale)?



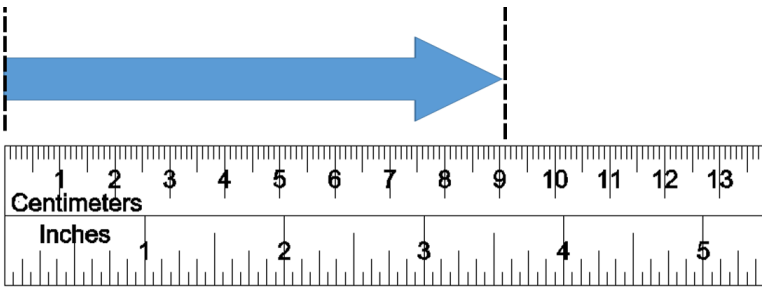
Reading a Metric Ruler

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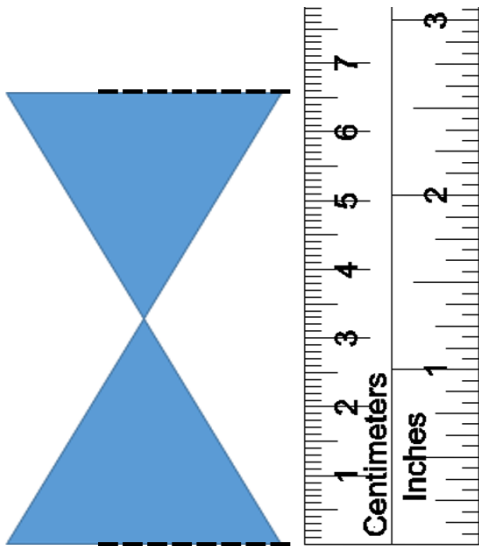
What's in a centimeter?



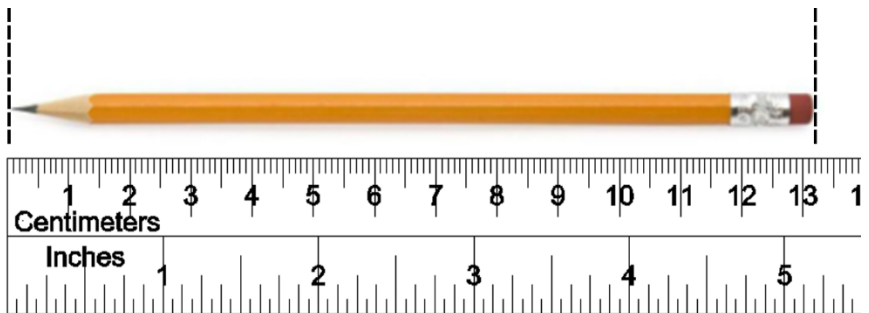
Example: What is the length of the arrow shown below?



Practice: What is the height of the hourglass below?



Application: Steve is creating a 3D-printed version of his pencil. In order to re-create the pencil, he needs to enter the length of his pencil into the computer program. What is the length of Steve's pencil?



How to Read a Ruler and Tape Measure Guided Note Packet – Answer Key

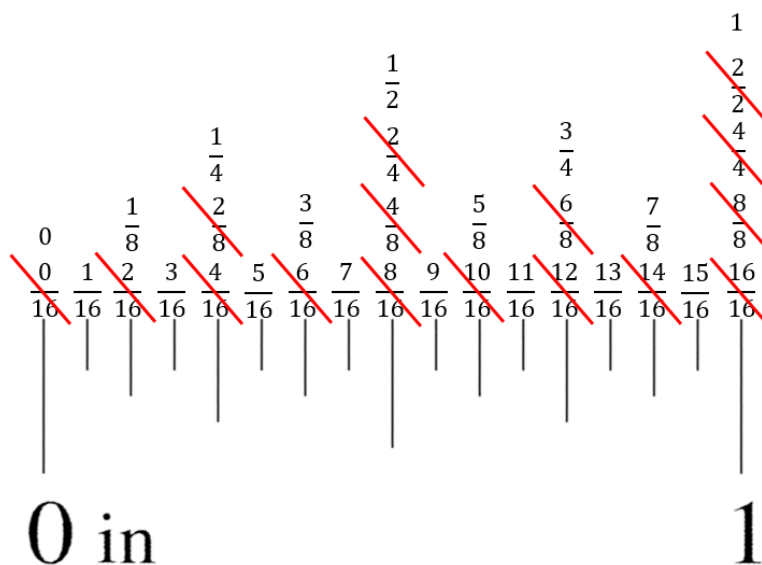
Standard units of measure:

- Rulers and tape measures usually measure in inches and/or centimeters
- A standard ruler is 12 inches, whereas a standard tape measure is 25 feet

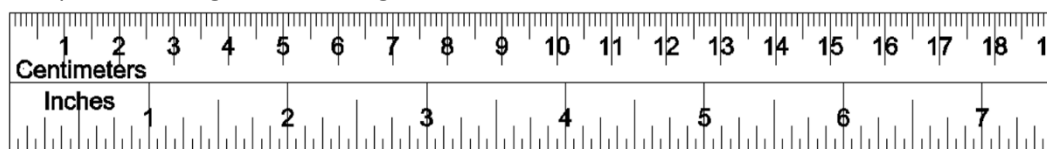
Steps to using a ruler and tape measure

- Place the zero hash mark of the ruler or tape measure at one end of the object that you intend to measure
- Make sure the ruler or tape measure is aligned with the object
- Note or mark the hash mark on the ruler or tape measure where the object ends
- The measurement is the dimensional length of the object

What's in an inch?

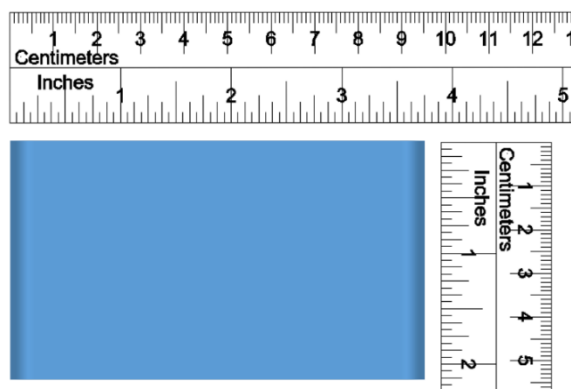


Example: How long is the rectangle below?



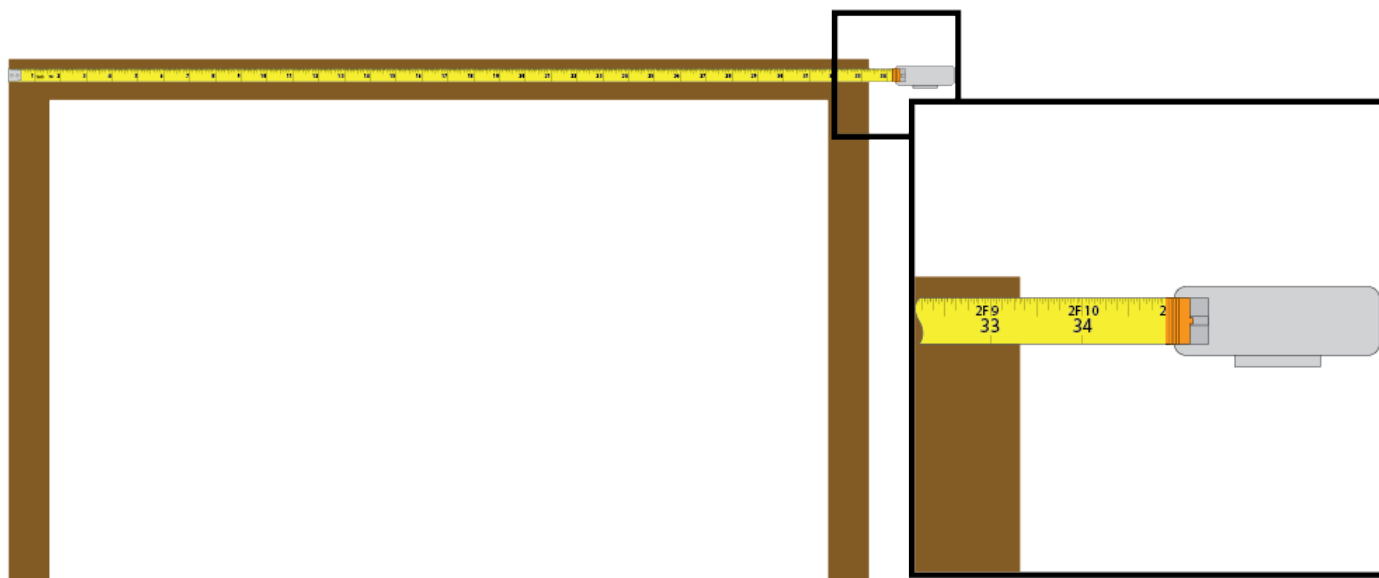
Answer: $6\frac{1}{4}$ inches

Practice: What are the dimensions of the rectangle below?



Answer: $2\frac{1}{8}$ in $\times$ $3\frac{3}{4}$ in

Application: A carpenter is measuring a door frame. What is the width of the door shown below (not drawn to scale)?

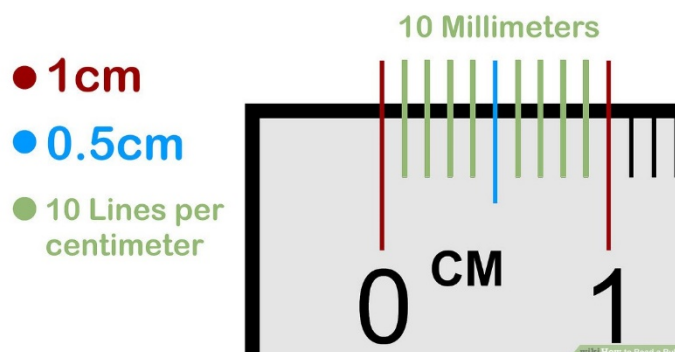


Answer: $33\frac{5}{16}$ inches

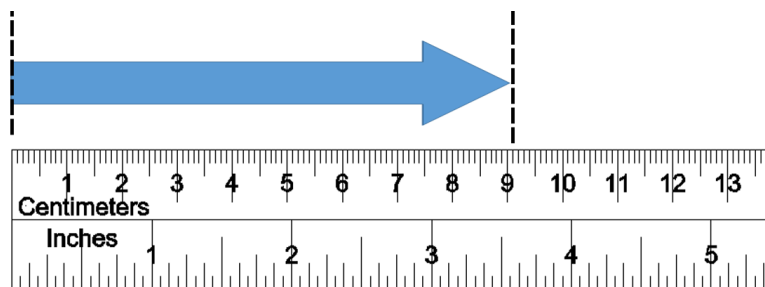
Reading a metric ruler

- A metric ruler contains centimeters and millimeters
- Each centimeter is broken down into ten sections, or one millimeter

What's in a centimeter?

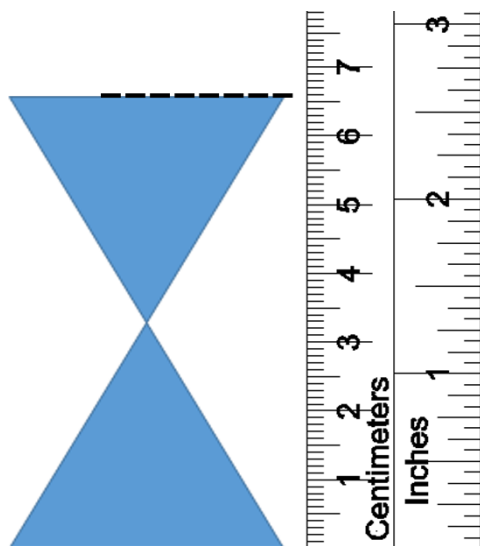


Example: What is the length of the arrow shown below?



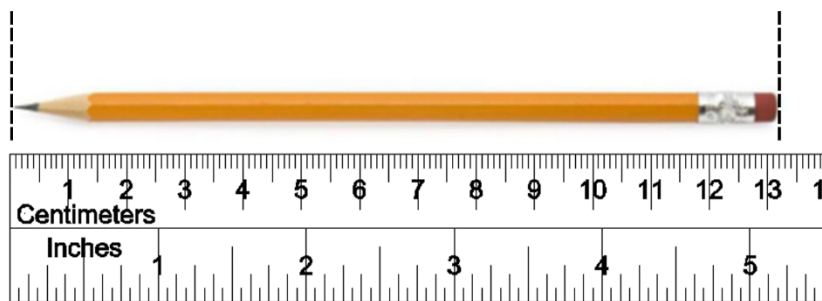
Answer: 9.1 centimeters

Practice: What is the height of the hourglass below?



Answer: 6.6 centimeters

Application: Steve is creating a 3-D printed version of his pencil. In order to re-create the pencil, he needs to enter the length of his pencil into the computer program. What is the length of Steve's pencil?



Answer: 13.2 centimeters

Lesson Two – How to Read a Ruler and Tape Measure

REVIEW: How to Read a Ruler and Tape Measure

5-10 minutes

Purpose:

Materials:

- *How to Read a Ruler and Tape Measure Exit Ticket*
- Plickers Cards
- Smartphone or tablet (instructor use only)

Facilitation Steps:

1. Create a free account on: www.plickers.com
2. Download the Plickers app onto a smartphone or similar device.
3. Create a Class with all participants listed by name (each name is associated with a number that coincides with a Plickers card).
4. Click create a “New Set” of questions.
5. Input the five questions located on *How to Read a Ruler and Tape Measure Exit Ticket*.
6. Add each question to the queue.
7. Print out the set of cards provided, one for each participant. If you plan on continuing with Plickers in the future, it may be best to laminate the cards, as the participants will keep them.
8. Pass out Plickers cards, one to each participant, assigning each card to the specific participant that the card corresponds with.
9. On your smart device, open the Plickers app, navigate to the queue, click on the first question, and select “Play Now.”
10. As each participant holds their QR code up, scan them until the entire class has answered.
11. When finished, select see results and move onto the next question.
12. After finishing all the questions, you can look back and see what percent of your class got each question correct, as well as how individual students scored.

How to Read a Ruler and Tape Measure Exit Ticket

1. What is 32 centimeters in inches?

A. 10.2394 inches

B. 12.5984 inches

C. 14.5692 inches

D. 12.2390 inches

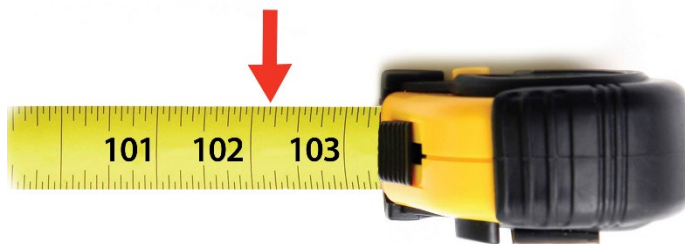
2. What is the measurement shown on the tape measure below in inches?

A. $102\frac{3}{16}$ inches

B. $101\frac{7}{8}$ inches

C. $102\frac{1}{8}$ inches

D. $102\frac{7}{8}$ inches



3. What is the measurement shown on the ruler below?

A. $1\frac{5}{16}$ inches

B. $1\frac{1}{4}$ inches

C. $1\frac{1}{2}$ inches

D. $1\frac{3}{8}$ inches



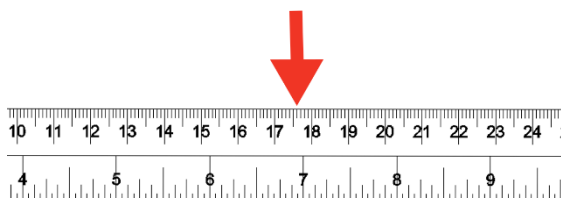
4. What is the measurement shown on the ruler below in centimeters?

A. 17.4 cm

B. 17 cm

C. 17.6 cm

D. 17.8 cm



5. What is the measurement shown on the ruler below?

A. $\frac{3}{16}$

B. $\frac{5}{16}$

C. $\frac{1}{4}$

D. $\frac{3}{8}$

