Name_____

CASE

Activity 6.3.1 How will it measure up?

Purpose

Planning and constructing projects are useful life skills. One important skill is the ability to read a ruler and tape measure accurately. In *Activity 3.1.4 Measure Me*, you used a variety of measurements and reviewed the differences between the English and metric systems. In project planning and construction, linear measurements are very important.

From miles to millimeters, the length, or distance, of objects can be measured. When constructing small projects, inches and feet are the most common English measurement increments while millimeters, centimeters, and meters are the most common metric increments.

When reading a metric ruler, each small mark represents 1mm (millimeter) and each whole number represents 1cm (centimeter as seen in Figure 1. 10mm is equal to 1cm and 100cm is equal to 1m (meter).

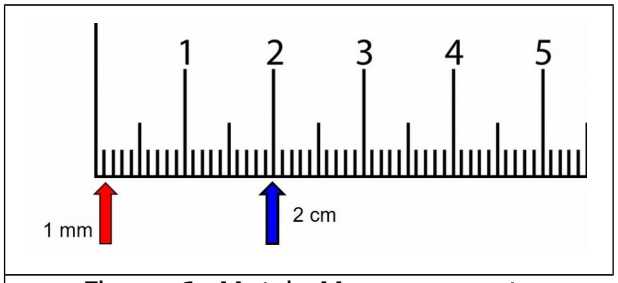


Figure 1. Metric Measurements

English measurement is based on fractions of inch. Each mark represents $^{1}/_{16}$ of an inch. Note that (″) represents inches and (′) represents feet. Figure 2 provides an image of a ruler with $^{1}/_{16}$ of an inch. One inch is equal to $^{16}/_{16}$ of an inch.

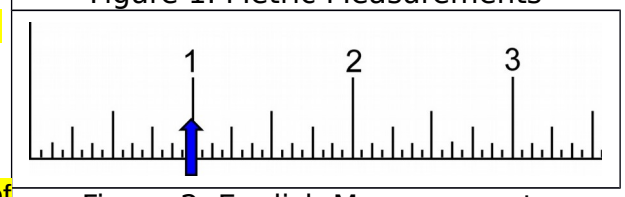


Figure 2. English Measurements

When reading English measurements, fractions are reduced as shown in Figure 3. All numbers in the numerator and denominator of the fraction are divisible by 4.

Accurate measurements are crucial when developing, sketching, and executing plans. If you are off, even by a small fraction, it could result in the entire project being ruined. Are you ready to begin planning and constructing projects? Find out by examining your ability to convert numbers and fractions, read a ruler, and measure accurately.

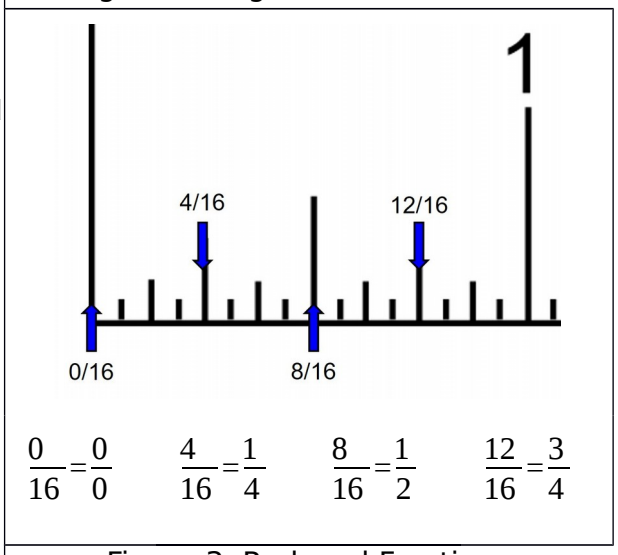


Figure 3. Reduced Fractions

Materials

Per group of students:
Ruler with inches and centimeters
100 ft. tape measure with feet and meters
Textbook
Desk

Per student:
Pencil
Agriscience Notebook

Procedure

Practice your measuring skills and conversions

Part One – Conversions

Convert the metric measurements from millimeters to centimeters and from centimeters to meters in Table 1 of *Activity 6.3.1 Student Worksheet*.

Reduce the fractions of an inch listed in Table 2.

Part Two – Reading a Ruler

Determine the length of the black bar in each picture in Table 3. Remember to always write the units of measurement in your answer.

Part Three – Measurements

1. Use the ruler provided to measure the lines in Table 4 to the nearest $^{1}/_{16}$ of an inch and the nearest tenth of a centimeter.
2. Use the ruler provided to measure the items listed in Table 5.

Conclusion

1. What are some of the differences between measuring in inches and centimeters?

Inches are bigger than centimeters.

2. In your opinion, which is easier to use, inches or centimeters? Why?

I think inches is easier to use because the measurements are easier.

3. In your opinion, which system of measurement is easier to convert? Why?

The English system because I am more used to using it.

Name_____

Activity 6.3.1 Student Worksheet

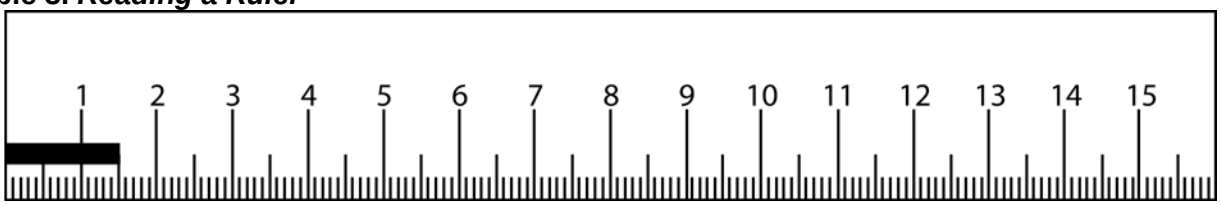
Table 1. ***Metric Conversions***

10mm = __1__cm	100cm = __1__m
25mm = __2.5__cm	350cm = __3.5__m
65mm = __6.5__cm	410cm = __4.1__m
105mm = __1.5__cm	525cm = __5.25__ m

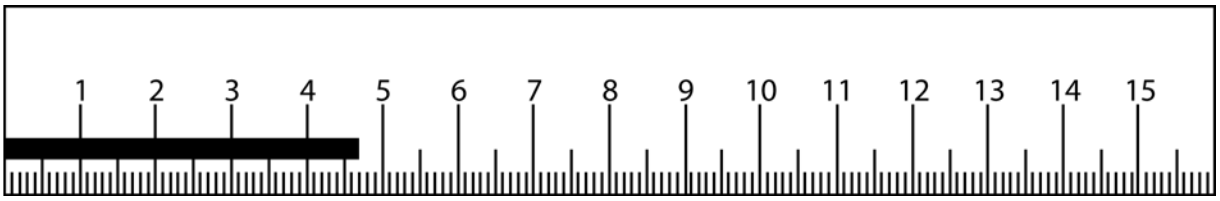
Table 2. ***Fraction Reductions***

$^{2}/_{16}$″ = __1/8__	$^{12}/_{16}$″ = __3/4__
$^{4}/_{16}$″ = __1/4__	$^{13}/_{16}$″ = __13/16__
$^{5}/_{16}$″ = _5/16___	$^{16}/_{16}$″ = __1__
$^{8}/_{16}$″= _1/2___	$^{17}/_{16}$″ = __17/16__
$^{10}/_{16}$″ = _5/8___	$^{20}/_{16}$″ = __5/4__

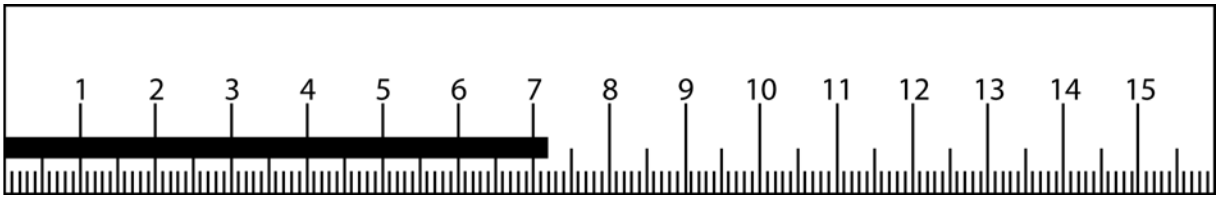
Table 3. ***Reading a Ruler***

1. 

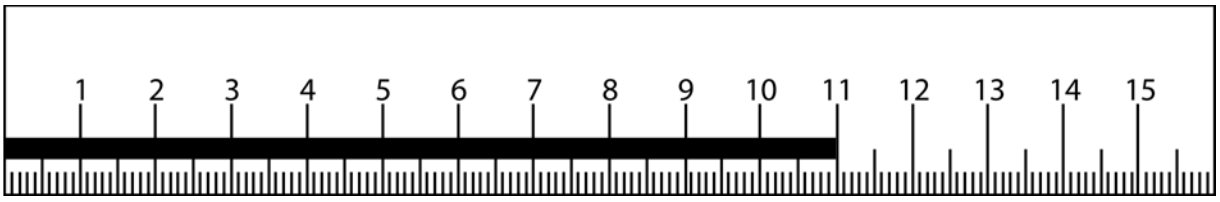
Answer _____1 1/2 cm_____

2. 

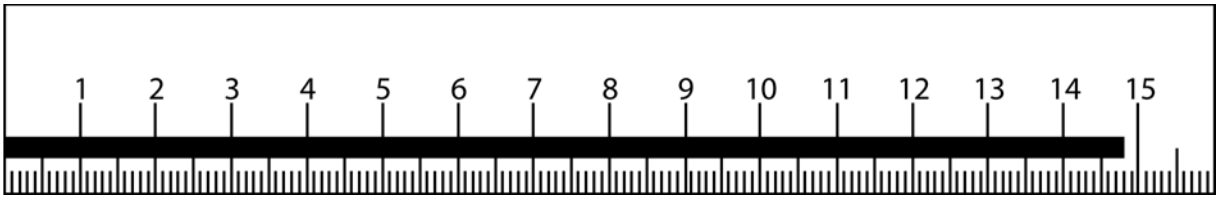
Answer _____4 1/2 cm_____

3. 

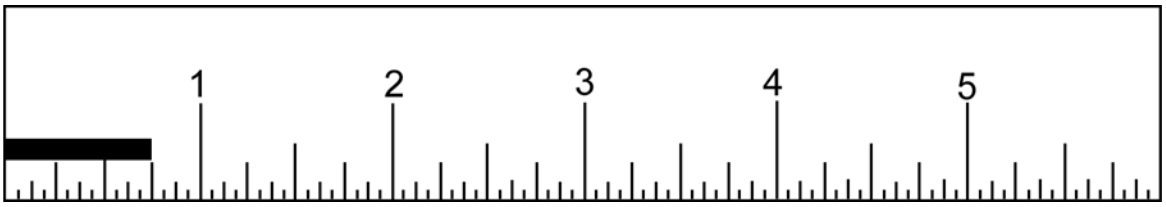
Answer _____7 1/8 cm_____

4. 

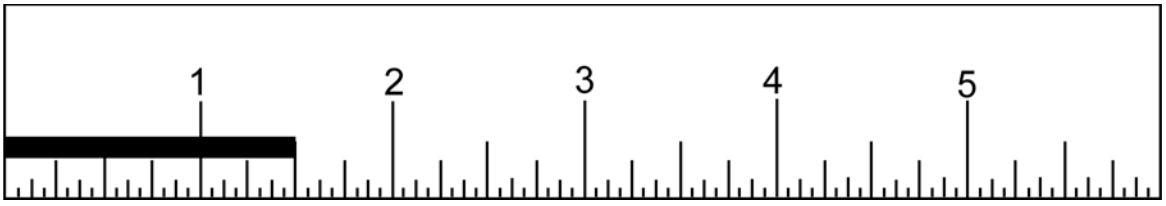
Answer _____11 cm_____

5. 

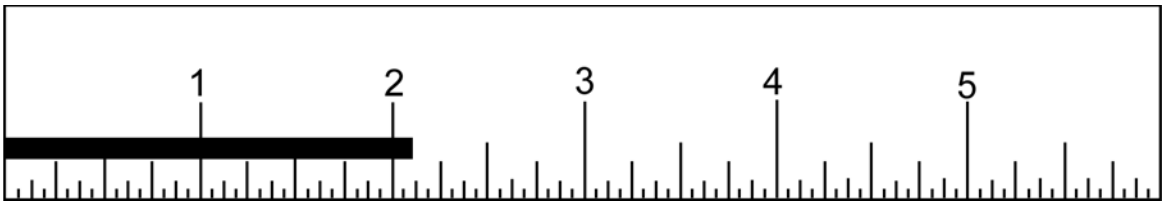
Answer _____14 3/8 cm_____

6. 

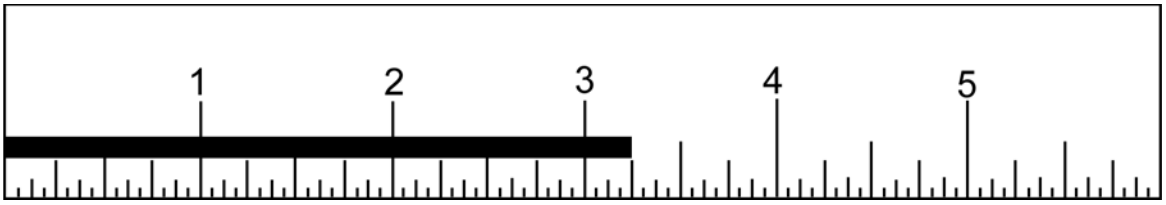
Answer _____3/4 in_____

7. 

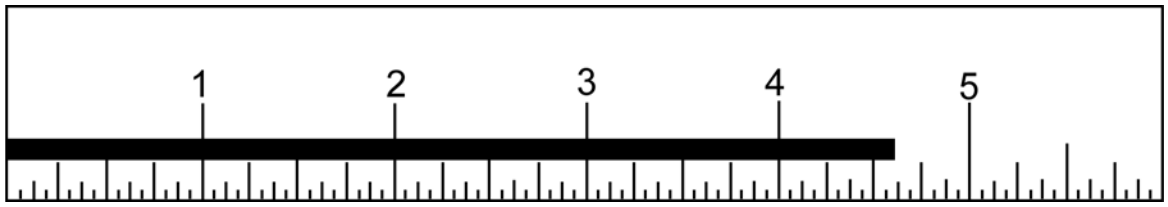
Answer _____1 1/2 in_____

8. 

Answer _____2 1/8 in_____

9. 

Answer ____3 1/4 in_____

10. 

Answer _____4 3/8 in_____

Lines to be measured

A.

B.

C.

D.

E.

F.

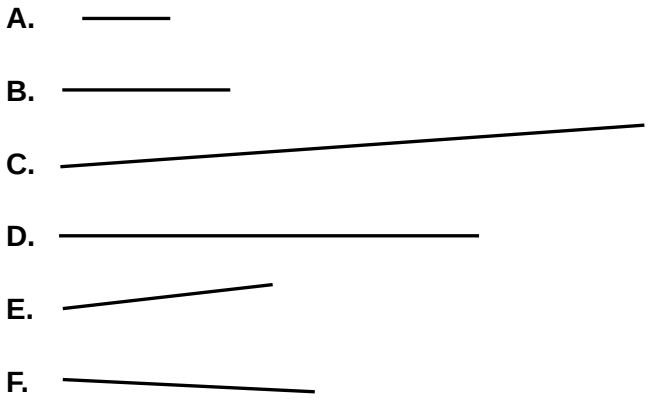


Table 4. ***Line Measurements***

	Inches	Centimeters
A.	1/4 in	1 cm
B.	3/4 in	2 cm
C.	2 1/4 in	6 cm
D.	1 3/4 in	4 cm
E.	1 in	2 cm
F.	1 in	3 cm

Table 5. ***Item Measurement***

Items	Feet & Inches	Meters or Centimeters
Textbook spine	11.41 in	28 cm
The longest side of your desk	4ft 10 in	147.32 cm
Designated wall in classroom (iphone)	6.1 in	15.39 cm