

$$1 \text{ in} = 2.54 \text{ cm}$$

$$1 \text{ meter} = 100 \text{ cm}$$

$$1 \text{ yd} = 3 \text{ ft}$$

AC Algebra 1/Geometry A

Name: \_\_\_\_\_

Unit Conversion Practice

Solve the unit conversion problem by cross canceling units.

Hint: Same units should be diagonal from each other

Problem	Conversion work and answer (circle your answer, use units)
1 yard to centimeters	$1 \text{ yd} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{2.54 \text{ cm}}{1 \text{ in}} = 91.44 \text{ cm}$
10 feet to meters and centimeters	$10 \text{ ft} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{2.54 \text{ cm}}{1 \text{ in}} \cdot \frac{1 \text{ m}}{100 \text{ cm}} = \frac{304.8}{100} \text{ m} = 3.048 \text{ m}$
9 yards to meters and centimeters	$9 \text{ yds} \cdot \frac{3 \text{ ft}}{1 \text{ yds}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{2.54 \text{ cm}}{1 \text{ in}} \cdot \frac{1 \text{ m}}{100 \text{ cm}} = \frac{822.96}{100} = 8.2296 \text{ m}$
50 feet to meters	$50 \text{ ft} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{2.54 \text{ cm}}{1 \text{ in}} \cdot \frac{1 \text{ m}}{100 \text{ cm}} = \frac{1524}{100} = 15.24 \text{ m}$
24 ft/sec to miles/minute	$24 \text{ ft/sec} \cdot \frac{1 \text{ mile}}{5280 \text{ ft}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} = \frac{1440}{5280} \text{ miles/min} \approx 0.27 \text{ miles/min}$
34 miles to inches	$34 \text{ miles} \cdot \frac{5280 \text{ ft}}{1 \text{ mile}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} = 2154240 \text{ in}$
27 yards/minute to feet/sec	$27 \text{ yds/min} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{81}{60} = 1.35 \text{ ft/sec}$
How many hours are in a day?	24 hrs
How many minutes are in a day?	$24 \text{ hrs} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = 1440 \text{ min}$
How many seconds are in a day?	$1440 \text{ min/day} \cdot \frac{60 \text{ sec}}{1 \text{ min}} = 86,400 \text{ sec/day}$
How many hours are in a year?	$24 \text{ hrs/day} \cdot 365 \text{ day/yr} = 8760 \text{ hours}$

6. Convert 7920 yards to miles.

Miles are bigger than yards; there are 1760 yards in every mile. Since I'm converting from a smaller unit (yards) to a bigger unit (miles), my answer needs to be a smaller number. So I divide:

Plan  
yds → feet → miles

$$\frac{7920 \text{ yds}}{1} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} \cdot \frac{1 \text{ mile}}{1760 \text{ ft}} = \frac{23760}{1760} \text{ miles} = 1.35 \text{ miles}$$

In groups of THREE, figure out a way to solve questions 7 and 8. Be ready to present to the class!

7. Which is faster, going 80 miles an hour or going 40 meters per second?

- 60 seconds : 1 minute
- 60 minutes : 1 hour
- 1 mile : 5280 feet
- 1 foot : 12 inches
- 2.54 centimeters : 1 inch
- 100 centimeters : 1 meter

\* I will convert 80/hr → meters/sec. Faster

$$\frac{80 \text{ miles}}{\text{hr}} \cdot \frac{5280 \text{ ft}}{1 \text{ mile}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{2.54 \text{ cm}}{1 \text{ in}} \cdot \frac{1 \text{ m}}{100 \text{ cm}}$$

$$\frac{12874752 \text{ meter}}{100 \text{ hr}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}}$$

$$80 \frac{\text{miles}}{\text{hour}} \approx$$

Plan  
miles → feet → in → cm → meters  
hour → min → sec

$$\frac{12874752 \text{ meters}}{360000} \text{ /sec} \approx 35.76 \text{ m/sec}$$

8. Suppose an object is moving at 66 ft/sec. How fast would you have to drive a car to keep pace with this object?

\* Cars =  $\frac{\text{miles}}{\text{hr}}$

$$\frac{66 \text{ ft}}{\text{sec}} \cdot \frac{1 \text{ mile}}{5280 \text{ ft}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$$

Plan  
ft → miles  
sec → min → hr

$$= \frac{237600}{5280} = 45 \frac{\text{miles}}{\text{hr}}$$