

# 17. [Units of Measurement]

## Skill 17.1 Converting customary units of length.

MMYellow 11 22 33 44  
MMRed 11 22 33 44

To change from **smaller** units to **larger** units

- Divide by the conversion factor (because you need less).

Example: To change 60 inches to feet  
 $\div$  by 12

To change from **larger** units to **smaller** units

- Multiply by the conversion factor (because you need more).

Example: To change 5 feet to inches  
 $\times$  by 12

### Conversion Facts

$$1 \text{ mi} = 1760 \text{ yd} = 5280 \text{ ft}$$

$$1 \text{ yd} = 3 \text{ ft} = 36 \text{ in.}$$

$$1 \text{ ft} = 12 \text{ in.}$$

Q. Write in feet:

$$5 \text{ yd} =$$

A.  $5 \text{ yd} \times 3$   
 $= 15 \text{ ft}$

To convert 5 yards to feet,  
multiply by 3.

a) Write in inches:

$$5 \text{ feet} = \boxed{60 \text{ in.}}$$

$$1 \text{ ft} = 12 \text{ in. so } 5 \times 12 =$$

b) Write in feet:

$$2 \text{ yards} = \boxed{\phantom{00}} \text{ ft}$$

c) Write in feet:

$$36 \text{ inches} = \boxed{\phantom{00}} \text{ ft}$$

d) Write in inches:

$$4 \text{ ft} = \boxed{\phantom{00}} \text{ in.}$$

e) Write in yards:

$$30 \text{ ft} = \boxed{\phantom{00}} \text{ yd}$$

f) Write in feet:

$$60 \text{ in.} = \boxed{\phantom{00}} \text{ ft}$$

g) Write in inches:

$$7 \text{ ft} = \boxed{\phantom{00}} \text{ in.}$$

h) Write in inches:

$$10 \text{ yd} = \boxed{\phantom{00}} \text{ in.}$$

i) Write in inches:

$$2 \text{ ft } 3 \text{ in.} = \boxed{\phantom{00}} \text{ in.}$$

j) Write in feet:

$$4 \text{ yd } 1 \text{ ft} = \boxed{\phantom{00}} \text{ ft}$$

## Skill 17.2 Converting units of time.

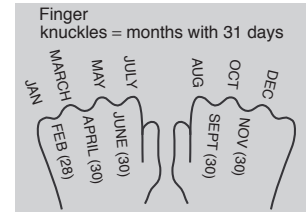
MMYellow 1 1 2 2 3 3 4 4  
MMRed 1 1 2 2 3 3 4 4

### Conversion Facts

1 century = 100 years  
 1 decade = 10 years  
 1 year = 12 months = 52 weeks = 365 days  
 1 leap year = 366 days  
 1 fortnight = 2 weeks  
 1 week = 7 days  
 1 day = 24 hours  
 1 hour (h) = 60 minutes = 3600 seconds  
 1 minute (min) = 60 seconds (s)

### Days in the month:

30 days have **September**  
**April**  
**June**  
**November.**



and

All the rest have 31  
 except February alone which has 28 days clear  
 and 29 in each leap year.

**Q.** Write in minutes:

3 hours, 45 minutes =

**A.**  $3\text{ h} \times 60$

= 180 min

180 min + 45 min

= **225 min**

To convert hours to  
 minutes, multiply  
 by 60.

Add the minutes.

**a)** Write in days:

4 weeks =

*1 week = 7 days so  $4 \times 7 =$*

**b)** Write in minutes:

120 seconds =

**c)** Write in seconds:

2 minutes =

**d)** Write in days:

2 weeks =

**e)** Write in weeks:

28 days =

**f)** Write in minutes:

3 hours =

**g)** Write in days:

5 weeks, 2 days =

**h)** Write in minutes:

1 hour, 15 minutes =

**i)** Write in hours:

10 days =

**j)** Write in hours:

1 day, 12 hours =

### Skill 17.3 Converting metric units of length.

To change from **smaller** units to **larger** units

- Divide by the conversion factor (because you need less).

Example: To change 40 mm to cm  
 $\div$  by 10

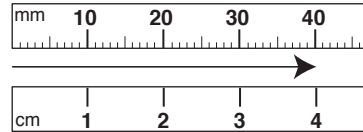
#### Conversion Facts

$1 \text{ km} = 1000 \text{ m} = 100,000 \text{ cm} = 1,000,000 \text{ mm}$   
 $1 \text{ m} = 100 \text{ cm} = 1000 \text{ mm}$   
 $1 \text{ cm} = 10 \text{ mm}$

To change from **larger** units to **smaller** units

- Multiply by the conversion factor (because you need more).

Example: To change 4 cm to mm  
 $\times$  by 10



**Q.** Write in meters:

600 cm =

**A.**  $600 \text{ cm} \div 100 = 6 \text{ m}$

To convert 600 centimeters to meters, divide by 100.

**a)** Write in meters:

1000 cm =  m

**b)** Write in centimeters:

100 mm =  cm

$100 \text{ cm} = 1 \text{ m}$  so  $1000 \div 100 =$  .....

**c)** Write in meters:

4 km =  m

**d)** Write in millimeters:

5 cm =  mm

**e)** Write in centimeters:

30 mm =  cm

**f)** Write in meters:

500 cm =  m

**g)** Write in millimeters:

2 cm =  mm

**h)** Write in millimeters:

2 m =  mm

**i)** Write in centimeters:

400 mm =  cm

**j)** Write in kilometers:

2000 m =  km

## Skill 17.4 Converting customary units of capacity.

MMYellow 1 1 2 2 3 3 4 4  
MMRed 1 1 2 2 3 3 4 4

To change from **smaller** units to **larger** units

- Divide by the conversion factor (because you need less).

Example: To change 8 quarts to gallons  
 $\div$  by 4

To change from **larger** units to **smaller** units

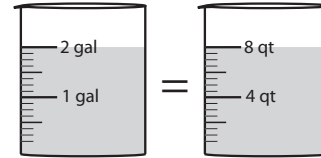
- Multiply by the conversion factor (because you need more).

Example: To change 2 gallons to quarts  
 $\times$  by 4

### Conversion Facts

$$1 \text{ gal} = 4 \text{ qt} = 8 \text{ pt}$$

$$1 \text{ qt} = 2 \text{ pt}$$



**Q.** Write in pints:

$$3 \text{ gal} =$$

**A.**  $3 \text{ gal} \times 8 = 24 \text{ pt}$  To convert 3 gallons to pints, multiply by 8.

**a)** Write in gallons:

$$40 \text{ qt} = \boxed{10 \text{ gal}}$$

**b)** Write in pints:

$$2 \text{ qt} = \boxed{\phantom{00}} \text{ pt}$$

$$4 \text{ qt} = 1 \text{ gal so } 40 \div 4 =$$

**c)** Write in quarts:

$$4 \text{ gal} = \boxed{\phantom{00}} \text{ qt}$$

**d)** Write in pints:

$$12 \text{ gal} = \boxed{\phantom{00}} \text{ pt}$$

**e)** Write in gallons:

$$16 \text{ pints} = \boxed{\phantom{00}} \text{ gal}$$

**f)** Write in quarts:

$$4 \text{ pints} = \boxed{\phantom{00}} \text{ qt}$$

**g)** Write in pints:

$$8 \text{ qt} = \boxed{\phantom{00}} \text{ pt}$$

**h)** Write in pints:

$$6 \text{ gal} = \boxed{\phantom{00}} \text{ pt}$$

**i)** Write in gallons:

$$56 \text{ qt} = \boxed{\phantom{00}} \text{ gal}$$

**j)** Write in quarts:

$$2.5 \text{ gal} = \boxed{\phantom{00}} \text{ qt}$$

## Skill 17.5 Converting metric units of capacity.

To change from **smaller** units to **larger** units

- Divide by the conversion factor (because you need less).

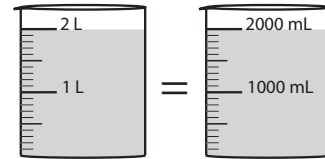
Example: To change 2000 mL to L  
 $\div$  by 1000

**Conversion Fact**  
 $1 \text{ L} = 1000 \text{ mL}$

To change from **larger** units to **smaller** units

- Multiply by the conversion factor (because you need more).

Example: To change 2 L to mL  
 $\times$  by 1000



**Q.** Write in milliliters:

$$7 \text{ L} =$$

**A.**  $7 \text{ L} \times 1000$   
 $= 7000 \text{ mL}$

To convert liters to milliliters, multiply by 1000.

**a)** Write in liters:

$$3000 \text{ mL} = \boxed{3} \text{ L}$$

$1000 \text{ mL} = 1 \text{ L}$  so  $3000 \div 1000 =$

**b)** Write in milliliters:

$$5 \text{ L} = \boxed{\phantom{000}} \text{ mL}$$

**c)** Write in liters:

$$2000 \text{ mL} = \boxed{\phantom{000}} \text{ L}$$

**d)** Write in milliliters:

$$4 \text{ L} = \boxed{\phantom{000}} \text{ mL}$$

**e)** Write in milliliters:

$$8 \text{ L} = \boxed{\phantom{000}} \text{ mL}$$

**f)** Write in liters:

$$4000 \text{ mL} = \boxed{\phantom{000}} \text{ L}$$

**g)** Write in liters:

$$10,000 \text{ mL} = \boxed{\phantom{000}} \text{ L}$$

**h)** Write in milliliters:

$$9 \text{ L} = \boxed{\phantom{000}} \text{ mL}$$

**i)** Write in liters:

$$12,000 \text{ mL} = \boxed{\phantom{000}} \text{ L}$$

**j)** Write in milliliters:

$$11 \text{ L} = \boxed{\phantom{000}} \text{ mL}$$

## Skill 17.6 Converting customary units of mass.

MMYellow 1 1 2 2 3 3 4 4  
MMRed 1 1 2 2 3 3 4 4

To change from **smaller** units to **larger** units

- Divide by the conversion factor (because you need less).

Example: To change 32 ounces to pounds  
÷ by 16

To change from **larger** units to **smaller** units

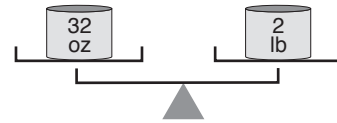
- Multiply by the conversion factor (because you need more).

Example: To change 2 pounds to ounces  
× by 16

### Conversion Facts

1 ton = 2000 lb = 32,000 oz

1 lb = 16 oz



**Q.** Write in ounces:

4lb =

**A.**  $4 \text{ lb} \times 16$   
= **64 oz**

To convert 4 pounds to ounces, multiply by 16.

**a)** Write in tons:

8000 lb =

**b)** Write in ounces:

1 lb =

*2000 lb = 1 ton so 8000 ÷ 2 =*

**c)** Write in pounds:

2 tons =

**d)** Write in tons:

4000 lb =

**e)** Write in pounds:

5 tons =

**f)** Write in pounds:

32 oz =

**g)** Write in ounces:

10 lb =

**h)** Write in pounds:

64 oz =

**i)** Write in tons:

10,000 lb =

**j)** Write in ounces:

5 lb =

## Skill 17.7 Converting metric units of mass.

To change from **smaller** units to **larger** units

- Divide by the conversion factor (because you need less).

Example: To change 3000 g to kg  
 $\div$  by 1000

### Conversion Facts

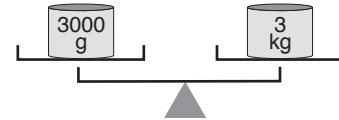
1 tonne = 1000 kg = 1,000,000 g

1 kg = 1000 g

To change from **larger** units to **smaller** units

- Multiply by the conversion factor (because you need more).

Example: To change 3 kg to g  
 $\times$  by 1000



**Q.** Write in grams:

7 kg =

**A.**  $7 \text{ kg} \times 1000 = 7000 \text{ g}$  To convert 7 kilograms to grams, multiply by 1000.

**a)** Write in grams:

9 kg =  g

**b)** Write in grams:

6 kg =

*1 kg = 1000 g so  $9 \times 1000 =$*

**c)** Write in kilograms:

2000 g =  kg

**d)** Write in grams:

4 kg =  g

**e)** Write in grams:

8 kg =  g

**f)** Write in kilograms:

3000 g =  kg

**g)** Write in kilograms:

9000 g =  kg

**h)** Write in kilograms:

1 tonne =  kg

**h)** Write in tonnes:

6000 kg =  t

**i)** Write in kilograms:

5 tonne =  kg

**Q.** One lap of the oval fountain in Hyde Park, London is 8400 inches. How many feet is this?

**A.**  $8400 \text{ in.} \div 12$  To convert inches to feet, divide by 12.  
 $= 700 \text{ ft}$

**a)** How many meters above sea level is Beaverdam Wash, the lowest point of Utah, if it is 600 times the height of a 100 cm person?

$100 \times 600 = 60,000 \text{ cm}$

$60,000 \div 100 =$

**b)** How many 620 g basketballs can be taken by the coach onto the plane if there is only two and a half kilograms of hand luggage allowed?

.....  
  
 .....

**c)** How many 250 mL cups are necessary to fill a 3 L vase?

.....  
  
 .....

**d)** A large orange has a mass of 8 oz. How many oranges would you expect to find in a 2 pound bag?

.....  
  
 .....

**e)** A half flush of a toilet uses 6 qt of water. How many pints is this?

.....  
  
 .....

**f)** Charlie's average stride length is 80 cm. At this rate, how many steps would he take to run 400 m?

.....  
  
 .....

**g)** How many feet above ground is the Empire State Building if it is 50 times the height of a 25 ft apartment block?

.....  
  
 .....

**h)** A quarter is about 1 inch wide. How many quarters, end to end, would you need to run the length of a table that is 7 feet long?

.....  
  
 .....