

Metric System Homework

REFERENCES:

Answers:

services.nietc.org

Wikipedia:

https://en.wikipedia.org/wiki/Metric_system

National Institute of Standards and Technology:

<https://www.nist.gov/sites/default/files/documents/pml/wmd/metric/1136a.pdf>

Purple Math:

<http://www.purplemath.com/modules/metric.htm>

CONVERSIONS:

1"=2.54cm 1'= 30.48 cm 1ft² = 0.0929m² 1Gallon = 3.785 liter 1lb = 0.453592 kg

QUESTIONS:

1) The metric system is based on the ?, which is the primary unit of length.

Answer:

- a. centimeter
- b. inch
- c. kilometer
- d. meter

2) The simplicity of the metric system lies in the relationship of the expression of quantity (how much) based on the number ?.

Answer:

- a. 0.1
- b. 2
- c. 10
- d. 100

3) The decimal system of numbers is based on the number ?.

Answer:

- a. one hundred
- b. ten
- c. two
- d. zero


4) The prefix deci means ?.

Answer:

- a. 100
- b. 1
- c. tenth
- d. none of the above

5) The deciliter is a unit of measure of ?.

Answer:

- a. area
- b. area2
-  c. volume
- d. weight

CHANGE THE FOLLOWING AS INDICATED:

6) 300 picofarads = 0.0003 microfarads


8) 1,200 millivolts = 1.2 volts

7) 0.005 watts = 5 milliwatts






9) 1 kilovolt = 1000 volts

10) How many meters are there in 35.4 decimeters?

Answer:


- a. 0.354 m
-  b. 3.54 m
- c. 354 m
- d. None of the above

11) Draw lines to match the following prefixes to the correct number:

centi		1/1,000
kilo		0.01
milli		10
deka		0.1
deci		1,000

12) To express measurements in the metric system, a person selects the proper prefix and writes it ? the word that represents the unit of measure.

Answer:

- a. after
-  b. before

13) A junction box with a screw cover measures 24" × 24". Express the area in millimeters, centimeters and meters. (Suggestion: Convert first to millimeters and then shift the decimal point for others.)

Answer:

<u>371612.16</u> mm ²	1" = 25.4mm	609.6mm × 609.6mm =	60.96cm × 60.96cm =
<u>3716.1216</u> cm ²	24" × 25.4mm =	371612.16	3716.1216
<u>.37161216</u> m ²	609.6mm	1" = 2.54cm	1" = .0254m
		24" × 2.54cm = 60.96cm	24" × .0254m = .6096m

14) The first floor elevation of a building is 76.38 feet above sea level. How many centimeters is it above sea level?

Answer:

- a. 23.2806 cm
 - b. 232.806 cm
 -  c. 2,328.06 cm
 - d. 23,280.6 cm
- cm = 76.38 × 30.48 cm = 2,328.06 cm**

15) Convert 42,291.4 centimeters to meters.

Answer:

- a. 4.291 meters
 - b. 42.914 meters
 - c. 422.914 meters**
 - d. 4,229.14 meters
- 422.914 meters**
Centimeter = 1/100 of a meter
42,291.4 cm divided by 100 =
422.914 m or move decimal two
places to the left.

16) There are two radii for a curved window wall. They are 40 feet 7 3/4 inches and 104 feet 11 1/8 inches. Express these dimensions in meters:

Answer:

- | | | |
|--|--|--|
| $40' 7 \frac{3}{4}" = \underline{12.38885\text{m}} \text{ m}$ | $40' \times 12 = 480"$
$480" + 7.75" = 487.75"$
mm = inches x 25.4
$487.75" \times 25.4 =$
12388.85 mm | $104' \times 12 = 1248"$
$1248" + 11.125" = 1259.125"$
mm = inches x 25.4
$1259.125" \times 25.4 = 31981.775$
mm |
| $104' 11 \frac{1}{8}" = \underline{31.981775 \text{ m}} \text{ m}$ | | |

17) An auditorium is to seat 2,400 people. The building code requires three square feet for each person. How many square meters will that auditorium have?

Answer:

- a. 6.6888 square meters
 - b. 66.888 square meters
 - c. 668.88 square meters**
 - d. 6,688.8 square meters
- 3 sq. ft. x 2,400 people = 7,200 sq. ft.**
Sq. meters = sq. ft. x 0.0929
7,200 x 0.0929 = 668.88 square meters

18) A 250-kVA, three-phase, 480-volt transformer requires 75 gallons of insulating oil to keep it properly cooled. How many liters is this?

Answer:

- a. 28.3875 liters
 - b. 283.875 liters**
 - c. 2,838.75 liters
 - d. 28,387.5 liters
- liters = gallons x 3.785**
75 x 3.785 = 283.875 liters

19) The transformer in Question 16 weighs 1,275 kilograms. Approximately how many pounds would this be?

Answer:

- a. 281.0865 pounds
 - b. 2,810.865 pounds**
 - c. 3,626.565 pounds
 - d. 28,108.65 pounds
- pounds = kilograms x 2.2046**
1,275 x 2.2046 = 2,810.865 pounds

20) Give the metric equivalent in millimeters of the internal diameter for each of the following trade sizes of Electrical Metallic Tubing:

Answer:

- | | | | |
|--|--|--|---|
| $\frac{1}{2}" = \underline{\hspace{2cm}} \text{ mm}$ | $0.622" \times 25.4 = 15.799 \text{ mm}$ | $2" = \underline{\hspace{2cm}} \text{ mm}$ | $2.067" \times 25.4 = 52.502 \text{ mm}$ |
| $1" = \underline{\hspace{2cm}} \text{ mm}$ | $1.049" \times 25.4 = 26.645 \text{ mm}$ | $3" = \underline{\hspace{2cm}} \text{ mm}$ | $3.356" \times 25.4 = 85.242 \text{ mm}$ |
| $1 \frac{1}{2}" = \underline{\hspace{2cm}} \text{ mm}$ | $1.610" \times 25.4 = 40.894 \text{ mm}$ | $4" = \underline{\hspace{2cm}} \text{ mm}$ | $4.334" \times 25.4 = 110.083 \text{ mm}$ |

21) As per Presidential Executive Order 12770, what was mandated as of July 25, 1991?

Answer:

- a. New federal construction projects must be developed using both standard and metric measurements.
- b. New federal construction projects must be developed using metric measurements.
- c. New federal construction projects must be developed using NEMA measurements.

22) The metric system based on decimals was developed by ? scientists.

Answer:

- a. Arabian
- b. Chinese
- c. English
- d. French

23) SI in the metric system stands for ? .

Answer:

- a. Structure InterContinental
- b. Structure International
- c. System InterContinental
- d. System International

24) Ambient temperatures used in Article 310 of the *NEC* are expressed in Fahrenheit and Celsius. Convert the following temperatures to the indicated units of measurement:

Answer:

140°F = _____ °C	60°C = (140° - 32) × 5/9 = 108 × 5/9
482°F = _____ °C	250°C = (482° - 32) × 5/9 = 450 × 5/9
90°F = _____ °C	32.2°C = (90° - 32) × 5/9 = 58 × 5/9
212°C = _____ °F	413.6°F = (212° × 9/5) + 32 = 381.6 + 32
100°C = _____ °F	212°F = (100° × 9/5) + 32 = 180 + 32

25) What effect will metrication have on America's global competitiveness?

Answer:

- a. Metrication will have a negative effect.
- b. Metrication will have a positive effect.
- c. Metrication will not change America's global competitiveness.
- d. Metrication will not allow American products to be accepted and used globally.

26) How does the *National Electrical Code* handle units of measurement?

Answer:

- a. Chapter 9 Tables requires that inch-pound units appear first and that the SI units (metric units) shall immediately follow in parentheses.
- b. Section 90.9 requires that inch-pound units appear first and that the SI units (metric units) shall immediately follow in parentheses.
- c. Section 90.9 requires that SI units (metric units) appear first and that the inch-pound units shall immediately follow in parentheses.