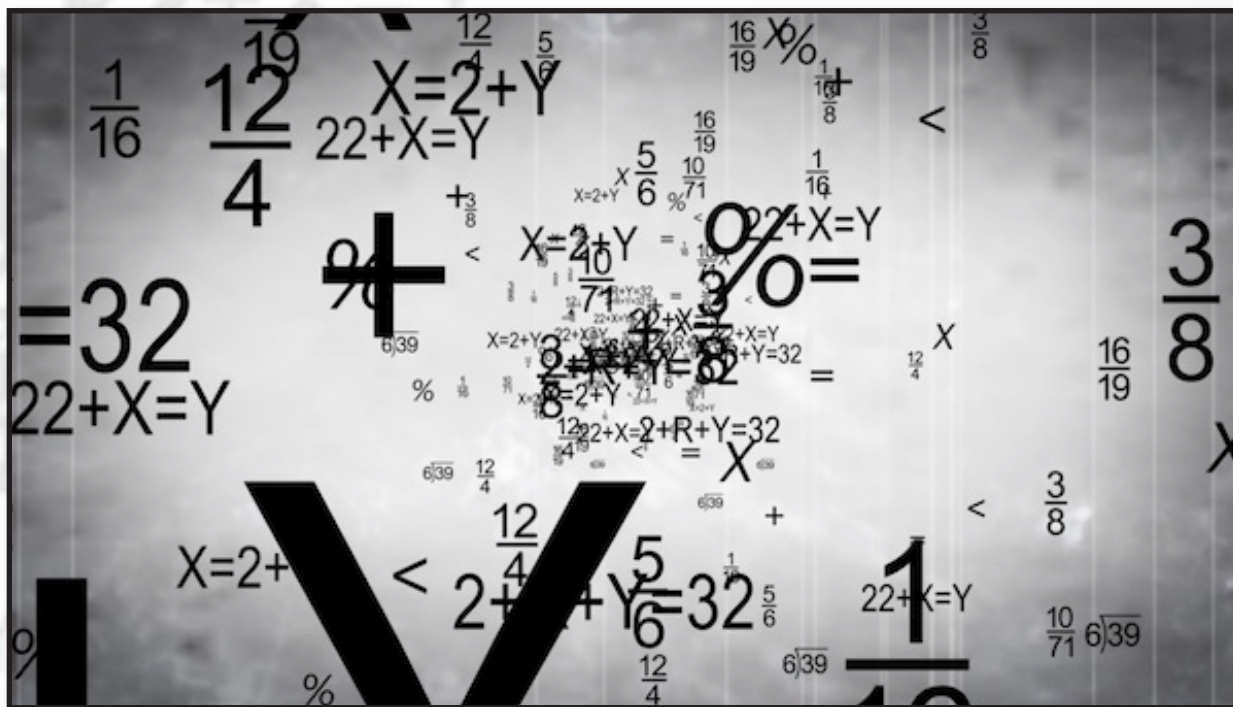


Math Review

Scenarios and Problems *Instructor Guide*



Module 8: Conversions

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Table of Contents

Conversions (Lineworker).....	3
Scenario.....	3
Problems.....	4
<i>Converting English Units.....</i>	<i>4</i>
<i>Converting Metric Units.....</i>	<i>5</i>
<i>Converting from English to Metric Units.....</i>	<i>6</i>
<i>Converting from Metric to English Units.....</i>	<i>7</i>
Conversions (Pipefitter/Pipelayer/Welder).....	8
Scenario.....	8
Problems.....	9
<i>Converting English Units.....</i>	<i>9</i>
<i>Converting Metric Units.....</i>	<i>10</i>
<i>Converting from English to Metric Units.....</i>	<i>11</i>
<i>Converting from Metric to English Units.....</i>	<i>12</i>

Conversions (Lineworker)

Scenario

“Hey, Tom, how much wire are we going to need for the repair?” Abigail asks.

Tom is working with Abigail’s crew from Canada during a major storm.

“We’ll need 151 feet of line to repair the damage to the residential area,” Tom replies.

“You wouldn’t happen to know what that amount is in meters, would you?” Abigail asks.

How many meters of wire would Tom tell Abigail’s crew they need to complete the repair?

- A. 50 m
- B. 46 m – Correct Answer
- C. 15 m
- D. 450 m



Abigail’s crew is helping with damage caused by a major storm

Courtesy OSHA, image is in the public domain

Problems

Converting English Units

Yolanda is working with a line crew lowering an underground network protector into a vault. The network protector weights 750 pounds. How would Yolanda report the weight of the network protector in tons?

- A. 0.333 tons
- B. 0.375 tons – Correct Answer
- C. 0.750 tons
- D. 2.667 tons

Harry's line crew is measuring the distance for an overhead line job. The line crew determined they need $\frac{1}{2}$ a mile of wire for the job. Since the wire spool is measured in feet, how many feet of wire would the crew have to get from the warehouse to complete the wire pulling job?

- A. 5,280 ft
- B. 2,500 ft
- C. 2,640 ft – Correct Answer
- D. 1,760 ft

Jim's crew is checking the oil level in several oil breakers in a substation. The crew determined they need 10 pints of oil to top-off all the breakers. How many gallons of oil should the crew get from the warehouse to top-off all the breakers?

- A. 2 $\frac{1}{2}$ gallons
- B. 1 $\frac{1}{3}$ gallons
- C. 2 gallons
- D. 1 $\frac{1}{4}$ gallons – Correct Answer

Converting Metric Units

Wanda is taking measurements on a circuit. She has a measurement of 250 milliamps. How many amps would Wanda report for her measurement?

- A. 0.250 amps – Correct Answer
- B. 2,500 amps
- C. 250,000 amps
- D. 2.50 amps

Jack is adding oil to a generator being used for temporary power on a new construction site. Jack added 1.5 liters to the generator. How many milliliters of oil did Jack add?

- A. 150 milliliters
- B. 1,000 milliliters
- C. 1,500 milliliters – Correct Answer
- D. 1.5 milliliters

Ned is completing a splice on an underground cable. When finished, the splice measures 15 centimeters. How long is the splice in millimeters?

- A. 1.5 mm
- B. 1,500 mm
- C. 0.0015 mm
- D. 150 mm – Correct Answer

Converting from English to Metric Units

Fran is working on completing a splice. The directions for the splice say she needs to remove 5 inches of the cable jacket prior to starting the splice, but her ruler measures in centimeters. How many centimeters does Fran have to cut the cable jacket prior to starting the splice?

- A. 15 cm
- B. 12.5 cm
- C. 12.7 cm – Correct Answer
- D. 1.27 cm

Jack is purchasing a new engine for an emergency diesel generator for a small town utility. He needs a 525-horsepower engine. One option is an engine coming from a foreign manufacturer that is rated in kilowatts. If 1 horsepower = 0.735 kilowatts, what kilowatt rating is equivalent to a 525-horsepower engine?

- A. 714 kW
- B. 526 kW
- C. 404 kW
- D. 386 kW – Correct Answer

Converting from Metric to English Units

Tyler is a line helper checking the engine oil in the district's line trucks. The oil container is marked in liters. Tyler has added 6 liters of oil to the trucks. How many gallons of oil has Tyler added to the line trucks?

- A. 1.58 gallons – Correct Answer
- B. 1.46 gallons
- C. 1.82 gallons
- D. 2.05 gallons

Enrique is measuring the amount of neutral wire needed for a new construction project. The reels of wire contain 305 meters each. How many feet of neutral wire is on each cable reel?

- A. 915 ft
- B. 3,660 ft
- C. 1,000 ft – Correct Answer
- D. 366 ft

Conversions (Pipefitter/Pipelayer/Welder) Scenario

“Hey, Rhonda, know how much pipe we need for that new residential area?” Rhonda’s supervisor, Anthony, asks.

“Let me check the crew’s notes,” she replies. “Looks like they are anticipating 0.57 miles of pipe needed.”

“Okay, but I am going to need that number in feet.”

How many feet of pipe should Rhonda report?

- A. 570 ft
- B. 3,010 ft – Correct Answer
- C. 5,280 ft
- D. 9,263 ft



The gas piping is for residential hookups
Courtesy DOE, image is in the public domain

Problems

Converting English Units

Yolanda is working with a gas crew lowering a steel plate over an open trench in a roadway. The plate weights 350 pounds. How would Yolanda report the weight of the plate in tons?

- A. 0.167 tons
- B. 0.175 tons – Correct Answer
- C. 5.71 tons
- D. 0.257 tons

Jim's crew is removing condensation from drip traps in several gas lines. The crew removed a total of 15 pints from several drip traps. How many gallons of water should the gas crew report was removed from the gas lines?

- A. 3.25 gallons
- B. 3 gallons
- C. 2 gallons
- D. 1.88 gallons – Correct Answer

Converting Metric Units

Jack is adding oil to a generator being used for temporary power on a new construction site. Jack added 1.5 liters to the generator. How many milliliters of oil did Jack add?

- A. 150 milliliters
- B. 1,000 milliliters
- C. 1,500 milliliters – Correct Answer
- D. 1.5 milliliters

Ned is completing a weld on a stainless steel 0.5 psi pressure pipe for a gas service in a residential neighborhood. The 1/4-inch pipe wall thickness is 1.65 millimeters. Ned has to convert millimeters to centimeters. How many centimeters is the wall thickness of this 0.5 psi, 1.65 millimeter pipe?

- A. 1.65 cm
- B. 0.0165 cm
- C. 0.00165 cm
- D. 0.165 cm – Correct Answer

Alice is checking the pressure in a 0.5 psi piping system. A 0.5 psi system is equal to 0.0344 bars of pressure. Alice needs to convert bars to millibars. What pressure would Alice report as the system pressure in millibars?

- A. 344 millibars of pressure
- B. 3.44 millibars of pressure
- C. 34.4 millibars of pressure – Correct Answer
- D. 0.0344 millibars of pressure

Converting from English to Metric Units

Jim's crew is removing condensation from drip traps in several gas lines. The crew removed a total of 10 pints from several drip traps. How many liters of water should the gas crew report was removed from the gas lines?

- A. 47.3 liters
- B. 5.16 liters
- C. 0.473 liters
- D. 4.73 liters – Correct Answer

Fran is working on completing a pipe fusion. The directions for the fusion requires that the pipe be inserted 1.5 inches into the coupling. Her ruler measures in centimeters. How many centimeters does Fran have to insert the plastic pipe into the coupling?

- A. 38.1 cm
- B. 3.07 cm
- C. 3.81 cm – Correct Answer
- D. 0.38 cm

Dan is measuring the amount of plastic piping needed for 10 homes. The distance from the main line on the street to the homes is 100 feet, so Dan needs 1,000 feet of low-pressure plastic pipe. How many meters of plastic pipe does Dan need to complete the project?

- A. 305 m – Correct Answer
- B. 333 m
- C. 281 m
- D. 3,048 m

Converting from Metric to English Units

Tyler is a gas distribution mechanic helper checking the engine oil in the district's gas trucks. The oil container is marked in liters. Tyler has added 10 liters of oil to 6 trucks. How many gallons of oil has Tyler added to the 6 gas trucks?

- A. 15.8 gallons – Correct Answer
- B. 15 gallons
- C. 20 gallons
- D. 12 gallons

Enrique is measuring the amount of low-pressure pipe needed for a new construction project. The reels of pipe contain 100 meters each. How many feet of low-pressure pipe is on each reel?

- A. 300 ft
- B. 333 ft
- C. 328 ft – Correct Answer
- D. 330 ft