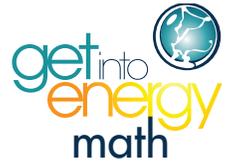


Name: _____ Date: _____



Get Into Energy Math
Student Quiz 8
Whole Number Operations

1. Val, a power plant gas technician, is checking the output of a thermocouple that is part of the boiler gas pilot interlock system. She wants to record the thermocouple output to the nearest millivolt (1/1,000 of a volt). Which number below should Val report?

- A. 0.01 volts
- B. 0.020 volts
- C. 0.30 volts
- D. 0.0405 volts

2. Tavon needs to compute the area of a circular access port into a boiler. He measures the port's diameter (D) as 14 inches and computes the area (A) as $\pi/4 * D^2$. Which of the following should Tavon use?

- A. $\pi/4 * 28 = A \text{ in}^2$
- B. $\pi/4 * 98 = A \text{ in}^2$
- C. $\pi/4 * 196 = A \text{ in}^2$
- D. $\pi/4 * 256 = A \text{ in}^2$

3. Sam, a renewable fuel specialist, examines the bio fuel lot (pile of wood chips) sitting in the fuel yard. The lot takes up an area of 169 square feet. If the lot is laid out in a square, what are the dimensions of the sides?

- A. 17 ft
- B. 16.9 ft
- C. 14 ft
- D. 13 ft

4. The power plant is undergoing an expansion and Blake, a plant electrician, is asked to order some lighting for the new addition. A high intensity lamp has been selected that is to be used with a universal base. The lamps are shipped 8 to a pallet, and the bases are shipped 12 to a pallet. What is the minimum number of lamp pallets that Blake must order so that he has one base for every lamp and there are no extra bases?

- A. 2 lamp pallets
- B. 3 lamp pallets
- C. 12 lamp pallets
- D. 24 lamp pallets

5. Blake is evaluating the gain on one of the boiler control circuits and records the following sequence of values at regular intervals: 2, 8, 32, 128. What would be the next reading that Blake is likely to record?

- A. 150
- B. 196
- C. 256
- D. 512

6. Gary, a relay technician, has been asked to measure and record the pickup current on a trip unit. He measures the AC current as 0.008766 amperes. He is asked to round the measurement to the nearest hundred-thousandth. Which of the following is how Gary should round the pickup current?

- A. 0.0087 amps
- B. 0.0088 amps
- C. 0.008766 amps
- D. 0.00877 amps

7. Blake, an electrician, is preparing instructions for mounting a piece of switch gear between two terminals with about $3 \frac{1}{2}$ inches on either side of the equipment. Which of the following measurements would communicate the greatest precision in centering the unit in the instructions?

- A. 3.5 inches
- B. 3.52 inches
- C. 3.520 inches
- D. 3.56 inches

8. Gail, a water quality technician, has to dilute a water treatment concentrate to a dilution of 138 parts per million (138×10^{-6}). Which of the following represents the dilution in scientific notation in standard form?

- A. 1.38×10^{-3}
- B. 1.38×10^{-4}
- C. 13.8×10^{-5}
- D. 1.36×10^{-8}

9. The engine running time indicator resembles an automotive odometer that records total vehicle miles. The running time indicator rolls over every 1,000 hours from 999.9 to 000.0. If Jeanne records a reading of 900 in April and 132.4 in May, what was the total running time between the two readings?

- A. 232.4 hours
- B. 248.6 hours
- C. 765.2 hours
- D. 1,030 hours

10. Tom has to rig some pipe on a truck. He only has a sling made of $\frac{5}{8}$ nylon rope. Tom calculates the rope's safety limit in the following way: $25 \times 60 =$ safe weight of lift. Based on Tom's calculation, what is the safety limit of the nylon rope?

- A. 300 lbs
- B. 600 lbs
- C. 1,500 lbs
- D. 750 lbs

11. Kelly is a gas system operator responsible for monitoring the flow rate of natural gas through the transmission system pipeline. The normal flow into the region is 4,300,000 cubic feet/day. Kelly knows that during the summer time the rate decreases by $\frac{1}{100}$ based on warmer temperatures. What flow rate would Kelly expect to report during the summer months?

- A. 4,300 ft³/day
- B. 43,000 ft³/day
- C. 430,000 ft³/day
- D. 430,000,000 ft³/day

12. Brian is an electrician in a power plant. He has been given the task of replacing filters in air handling units for 5 battery rooms. Each air handling unit needs 16 filters to clean the incoming air. How many filters will Brian need?

- A. 21 filters
- B. 40 filters
- C. 65 filters
- D. 80 filters

13. Val, a boiler maker, is using a handheld temperature sensing tool to detect abnormal temperature conditions in a boiler. After taking the reading, she noted the temperature was 90.15°F above ambient when the boiler was shut down. If the temperature increases by a factor of 10 above ambient when it is operating, what would the operating temperature be?

- A. $1,101.5^{\circ}\text{F}$
- B. 100.15°F
- C. $1,001.5^{\circ}\text{F}$
- D. 901.5°F

14. Kathy is calculating the gas use of a large industrial customer. The customer used 55,000 cubic feet in a 5.5-hour period. If the customer shuts down all of its large furnaces, the consumption is reduced by $1/1,000$. What would be the amount of consumption reduction?

- A. $5,500\text{ ft}^3$
- B. $55,000\text{ ft}^3$
- C. 550.0 ft^3
- D. 55.0 ft^3

15. Jill is doing a pipe fusion on plastic pipe being installed in a new gas system. The pipe specifications require that before the pipe is fused, the fusion machine must be heated to 480°F . The machine is currently reading 233°F . How many more degrees does the machine have to heat up to get to the required temperature of 480°F ?

- A. 250°F
- B. 257°F
- C. 247°F
- D. 253°F