

1. Joe slams a bouncy ball from a distance four feet above the ground. The ball takes its first initial bounce to a height of 40 feet. Each successive bounce is 75% of the height of the previous bounce. Find the total vertical distance the ball travels from the time Joe slammed it.
 - a. 160 feet
 - b. 164 feet
 - c. 320 feet
 - d. 324 feet
 - e. Answer Not Given

2. Two cars leave a parking lot at the same time. After one hour, the red car has traveled 32 miles due northwest, and the blue car has traveled 50 miles due southwest. How far apart are the cars at this time?
 - a. 58.8 miles
 - b. 59.3 miles
 - c. 59.8 miles
 - d. 60.3 miles
 - e. 60.8 miles

3. A coin jar contains 32 pennies, 14 nickels, 5 dimes and 9 quarters. Find the probability that, without replacement, a dime and a nickel are drawn.
 - a. 2.0%
 - b. 2.5%
 - c. 3.0%
 - d. 3.5%
 - e. 4.0%

4. A colony of bacteria contains 32 members initially and grows at a rate of 7% each 15 minutes. How many bacteria are present after one hour?
 - a. 36
 - b. 38
 - c. 40
 - d. 42
 - e. 44

5. A yo-yo company makes 32 yo-yos on the first day, 36 yo-yos on the second day, 40 yo-yos on the third day, and continues this pattern until the 86th day. How many yo-yos did the company make in the 86 day period?
 - a. 17,200
 - b. 17,286
 - c. 17,372
 - d. 17,444
 - e. Answer Not Given

6. The price of a shirt is increased by 10% and then decreased by 10%. What is the current price of the shirt as compared to the original price of the shirt?
- 10% less
 - 1% less
 - Same
 - 1% more
 - 10% more
7. A sphere with radius 2 inches is placed completely inside of a sphere with radius 4 inches. What percent of the larger sphere isn't occupied by the smaller sphere?
- 12.5%
 - 25%
 - 50%
 - 75%
 - 87.5%
8. Jordan and Billy are sitting on a teeter-totter. Jordan sits at the left-end of the teeter-totter and weighs 52 pounds. Billy sits at the right-end of teeter-totter and weighs 38 pounds. If Jordan's position is given by $x = 0$, and Billy's position is given by $x = 45$, where should the center of the teeter-totter be so the weight is evenly distributed?
- 19
 - 22
 - 25
 - 28
 - 31
9. A cylinder has an initial height of 20 centimeters and an initial radius of 35 centimeters. The height is increasing at a rate of 3.5 centimeters per second, and the radius is decreasing at a rate of 2 centimeters second. The volume of the cylinder at $t = 4$ is what percent of the volume of the cylinder at $t = 0$?
- 95%
 - 97%
 - 99%
 - 101%
 - 103%
10. A mixture initially consists of 100 mL of 64% acid. How many milliliters of 80% acid must be added to create a solution that is 76% acid?
- 100
 - 200
 - 300
 - 400
 - 500

11. A can of soup costs \$0.48 at the Save-A-Lot grocery store. If sales tax is 6.04%, what is the maximum number of cans of soup that Bill can buy with a \$10 bill?
- 17
 - 18
 - 19
 - 20
 - 21
12. Suppose $f(x) + f(10 - 2x) = 11$. If $f(2) = 8$, which of the following must be equal to $f(6)$?
- $f(1)$
 - $f(3)$
 - $f(4)$
 - $f(5)$
 - $f(8)$
13. Melissa is enrolled in a Statistics class where her unit exams are 10%, 20% and 30% and her final exam is worth 40%. At the end of the semester, Melissa is allowed to choose which of her exams counts for 30%, which counts for 20% and which counts for 10%. [Melissa has to use each exam score exactly once.] If Melissa's unit exam scores are 84%, 72%, and 90%, what does she need on her final exam to achieve an 80% average for the course?
- 70%
 - 72.5%
 - 75%
 - 77.5%
 - 80%
14. The electrical resistance of a wire varies directly with the length of the wire and inversely with the square of the diameter of the wire. If a wire 432 feet long and 4 millimeters in diameter has a resistance of 1.24 ohms, find the length of a wire of the same material whose resistance is 1.44 ohms and whose diameter is 3 millimeters.
- 242 feet
 - 252 feet
 - 262 feet
 - 272 feet
 - 282 feet

15. A temperature of 0 degrees Celsius corresponds to a temperature of 32 degrees Fahrenheit, a temperature of 5 degrees Celsius corresponds to a temperature of 41 degrees Fahrenheit. Convert 22 degrees Celsius to Fahrenheit.
- 71.6 degrees Fahrenheit
 - 72.5 degrees Fahrenheit
 - 73.4 degrees Fahrenheit
 - 74.3 degrees Fahrenheit
 - 75.2 degrees Fahrenheit
16. A life raft, set adrift from a sinking ship 150 miles offshore, travels directly toward a Coast Guard station at the rate of 5 miles per hour. At the time that the raft is set adrift, a rescue helicopter is dispatched from the Coast Guard station. If the helicopter's average speed is 90 miles per hour, how long will it take the helicopter to reach the life raft?
- 1 hour 25 minutes
 - 1 hour 30 minutes
 - 1 hour 35 minutes
 - 1 hour 40 minutes
 - 1 hour 45 minutes
17. A rectangle has its base on the x-axis and its upper vertices on the parabola $y = 48 - x^2$. Find the maximum area the rectangle can have.
- 128
 - 160
 - 192
 - 224
 - 256
18. A motorboat heads upstream a distance of 24 miles on the Illinois River, whose current is running at 3 miles per hour. The trip up and back takes 6 hours. Assuming that the motorboat maintained a constant speed relative to the water, what was its speed?
- 3 mph
 - 5 mph
 - 7 mph
 - 9 mph
 - 11 mph
19. Danny can do a job in 4 hours. Mike can do the same job in 6 hours. If Danny and Mike work together, how long will it take them to complete the job?
- 2.0 hours
 - 2.2 hours
 - 2.4 hours
 - 2.6 hours
 - 2.8 hours

20. A radioactive sample of a particular isotope has a half-life of 132 days. If there are 10 grams of the sample present initially, after how many days will there be 4 grams remaining?
- 164 days
 - 169 days
 - 174 days
 - 179 days
 - 184 days
21. Four large cheeseburgers and two chocolate shakes cost a total of \$7.90. Two shakes cost \$0.15 more than one cheeseburger. What is the cost of a cheeseburger?
- \$0.85
 - \$1.00
 - \$1.20
 - \$1.55
 - \$1.75
22. A theater contains 25 seats in the first row and 30 rows in all. Each successive row contains one more seat than the row before it. How many seats does the theater have?
- 750
 - 1,025
 - 1,140
 - 1,185
 - 1,220
23. Mrs. Stinson's third hour class has 13 boys and 8 girls. If she wants to choose a committee of 7 students, what is the probability that the committee contains exactly 5 boys and 2 girls?
- 31%
 - 33%
 - 35%
 - 37%
 - 39%
24. The angle of depression is 33 degrees from a point 8,676 feet above sea level on the north rim of a canyon to a point 6,833 feet above sea level on the south rim. How wide is the canyon at that point?
- 1,197 feet
 - 1,321 feet
 - 2,274 feet
 - 2,838 feet
 - 3,233 feet