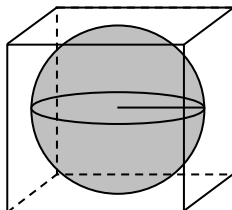




MB2 Advanced Diagnostic Test

1. What is the prime factorization of 98?
2. A ladder is leaning against a wall. The length of the ladder is 15 feet. The ladder touches the wall at a point 12 feet off the ground. How far is the base of the ladder from the base of the wall?
3. A pair of dice is rolled. What are the chances the sum of the two numbers is 6?
4. Katie deposits 5,000 dollars in a bank account which pays 6% simple interest each year. What is the value of her deposit after five years (rounded to the nearest cent)?
5. Find the volume of the free space (non-shaded region) in the cube shown below given that the cube has a height of 20 m and the sphere in the cube has a radius of 8 m.



6. The junior class put on a play as a fundraiser. Tickets cost \$6 for adults and \$4 for kids. 172 people attended the show, and ticket sales totaled up to \$884. If everyone bought their own ticket, and all those who bought a ticket attended the show, how many kids attended?
7. What is the surface area of a sphere with a diameter of 12 inches?
8. Josh can run 9 miles in 81 minutes. At this rate, how many miles could he run in 2.5 hours? Round to the nearest tenth of a mile.
9. Linda has \$15.50 in her piggy bank which only has dimes and nickels. Given that there are 5 more dimes than nickels, how many dimes does she have?
10. Peter orders a pizza. He eats 20% of the pizza, and then his friend eats $\frac{3}{8}$ of the leftover pizza. What percent of the original pizza has not been eaten?



MB2 Advanced Diagnostic Assessment Key

1. $2 \cdot 7^2$
2. 9
3. $\frac{5}{36}$
4. 6500
5. 7798.94
6. 74
7. 452.39 (144pi)
8. 16.7
9. 105
10. 50%