

Group G

Sample Questions

Q1. A perfect square is a whole number whose square root is also a whole number. For example, 225 is a perfect square since its square root is 15. How many perfect squares are there between 2 and 100 *inclusive*?

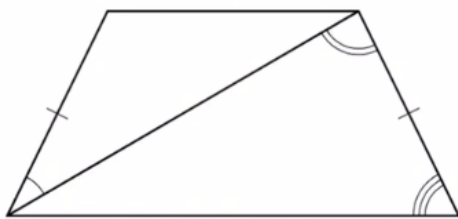
Q2. Amy, Brielle and Clara were baking muffins. Brielle baked 10% less muffins than Amy, but 30% more muffins than Clara. By what percent did Amy make more muffins than Clara?

Q3. Two balls with radii of 3 and 5 were placed on the left side of the balance scale, and one ball with a radius of 8 was placed on the right side. Which side will tip over? (All balls are made entirely of the same material.)

Q4. A rabbit named Coco can finish a pack of dry food in 12 days, a guinea pig named Pippa can finish it in 6 days, and a hamster named Milo can finish it in just 4 days. How many days will one pack of dry food last them if they all eat together?

Q5. Oliver and Henry set off home from the library together. After 30 minutes, when they had covered a third of the way home, Oliver realized he had left his book at the library and ran back to get it. After retrieving the book, he hurried home and arrived 30 minutes earlier than Henry, who continued walking home at his constant speed the whole way. How much faster is Oliver's running speed compared to Henry's walking speed, if Oliver ran at a constant speed the entire way after parting with Henry?

Q6. In an isosceles trapezoid, a diagonal forms a 30° angle with one lateral side and an 80° angle with the base. Find the measure of the angle at the larger base of the trapezoid.



Q7. For what values of a , b , c and d the equation

$$5x^3 - 32x^2 + 75x - 71 = a(x - 2)^3 + b(x - 2)^2 + c(x - 2) + d$$

became an identity?