# Praxis Elementary Education: Mathematics CKT (7813) Practice Exam (Sample)

## Study Guide


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# Questions

**1. How many degrees are in a right angle?**

**A. 45 degrees**

**B. 90 degrees**

**C. 180 degrees**

**D. 360 degrees**

**2. What is the relationship between the radius and the circumference of a circle?**

**A. Directly proportional**

**B. Inversely proportional**

**C. Independent**

**D. Dependent on the area**

**3. A store is having a sale with a 20% discount. If an item costs $50, what is the discount amount?**

**A. $5**

**B. $10**

**C. $15**

**D. $20**

**4. What is the equivalent fraction of 50%?**

**A. 1/3**

**B. 1/4**

**C. 1/2**

**D. 2/3**

**5. If a box contains 12 red balls and 4 green balls, what fraction of balls are red?**

**A. 2/3**

**B. 1/2**

**C. 1/3**

**D. 3/4**

**6. What is the decimal equivalent of the fraction 1/3?**

**A. 0.33**

**B. 0.25**

**C. 0.5**

**D. 0.75**

**7. Which of the following is an example of a perfect square?**

**A. 2**

**B. 3**

**C. 4**

**D. 5**

**8. What is the value of the expression 3^2 + 4^2?**

**A. 25**

**B. 26**

**C. 27**

**D. 28**

**9. What is the probability of rolling a 3 on a standard six-sided die?**

**A. 1/6**

**B. 1/3**

**C. 1/2**

**D. 1/4**

**10. How many degrees does a right triangle contain at least?**

**A. Less than 90 degrees**

**B. Exactly 180 degrees**

**C. Exactly 90 degrees**

**D. More than 90 degrees**

# Answers

**1. B**
**2. A**
**3. B**
**4. C**
**5. A**
**6. A**
**7. C**
**8. A**
**9. A**
**10. C**

# Explanations

## 1. How many degrees are in a right angle?

**A. 45 degrees**

**B. 90 degrees**

**C. 180 degrees**

**D. 360 degrees**

**A right angle is defined as an angle that measures exactly 90 degrees. This measurement is a fundamental concept in geometry and is widely used in various applications, including construction, design, and engineering. The designation of 90 degrees is integral to the Cartesian coordinate system and various geometric figures, such as rectangles and squares, which rely on right angles for proper dimensions and angles. Understanding right angles is crucial for students, as they serve as the building blocks for more complex geometric concepts. In contrast, angles measuring 45 degrees represent acute angles, while 180 degrees denote a straight angle, and 360 degrees signify a full rotation. Each of these angles has its specific characteristics but does not match the definition of a right angle.**

## 2. What is the relationship between the radius and the circumference of a circle?

**A. Directly proportional**

**B. Inversely proportional**

**C. Independent**

**D. Dependent on the area**

**The relationship between the radius and the circumference of a circle is directly proportional. This means that as the radius increases, the circumference also increases in a predictable manner. The formula that defines this relationship is given by the equation $C = 2\pi r$, where $C$ represents the circumference and $r$ represents the radius. In this formula, $\pi$ is a constant, which indicates that the circumference increases in a linear fashion with respect to the radius. This constant ratio signifies that for every unit increase in radius, the circumference increases by a factor of $2\pi$. Therefore, if you were to double the radius, the circumference would also double, reaffirming the idea of direct proportionality. This clear and consistent connection is crucial in understanding properties of circles in geometry.**

## 3. A store is having a sale with a 20% discount. If an item costs $50, what is the discount amount?

**A. $5**

**B. $10**

**C. $15**

**D. $20**

**To determine the discount amount on an item that costs $50 with a 20% discount, you need to calculate 20% of $50. First, convert the percentage to a decimal for the calculation. Twenty percent is equivalent to 0.20 when expressed as a decimal. Then, multiply the cost of the item by this decimal: $0.20 \times \$50 = \$10$. This means the discount amount is $10. Understanding how to convert percentages to decimals and then applying that to find the actual dollar amount is crucial in solving such problems. Knowing that 20% of 50 results in a discount of $10 helps in grasping percentage calculations more effectively.**

## 4. What is the equivalent fraction of 50%?

**A. 1/3**

**B. 1/4**

**C. 1/2**

**D. 2/3**

**To determine the equivalent fraction of 50%, it is useful to understand what a percentage represents. Percentages are a way to express a number as a fraction of 100. Therefore, 50% can be mathematically expressed as: 50% = 50/100 Next, this fraction can be simplified. Both the numerator (50) and the denominator (100) can be divided by their greatest common divisor, which is 50. Performing this operation: 50 ÷ 50 = 1 100 ÷ 50 = 2 This results in the simplified fraction: 50/100 = 1/2 Thus, 50% is equivalent to the fraction 1/2. This understanding is important for converting percentages to fractions and vice versa, which is a foundational concept in elementary mathematics.**

## 5. If a box contains 12 red balls and 4 green balls, what fraction of balls are red?

**A. 2/3**

**B. 1/2**

**C. 1/3**

**D. 3/4**

**To find the fraction of the balls that are red, you first need to consider the total number of balls in the box. There are 12 red balls and 4 green balls, which gives a total of 12 + 4 = 16 balls. Next, to determine the fraction of the balls that are red, you take the number of red balls and divide it by the total number of balls. This results in 12 red balls divided by 16 total balls, which can be expressed as the fraction 12/16. This fraction can be simplified. Both the numerator and the denominator can be divided by their greatest common divisor, which is 4. When you divide 12 by 4, you get 3, and when you divide 16 by 4, you get 4. Therefore, the simplified fraction is 3/4. Thus, the fraction of the balls that are red is correctly identified as 3/4.**

## 6. What is the decimal equivalent of the fraction 1/3?

**A. 0.33**

**B. 0.25**

**C. 0.5**

**D. 0.75**

**The decimal equivalent of the fraction $\frac{1}{3}$ is found by dividing 1 by 3. When you carry out the division, 1 divided by 3 results in a repeating decimal, 0.333..., which can be rounded to two decimal places as 0.33. This value represents the idea that if you take one whole and divide it into three equal parts, each part is approximately 0.33 of the whole. Since it is a repeating decimal, this approximation is often used in everyday calculations. Given the nature of fractions, other options given in the question do not represent $\frac{1}{3}$. For instance, 0.25 is the decimal equivalent of $\frac{1}{4}$, 0.5 corresponds to $\frac{1}{2}$, and 0.75 equals $\frac{3}{4}$. Thus, 0.33 accurately reflects $\frac{1}{3}$ when you consider the division of 1 by 3.**

## 7. Which of the following is an example of a perfect square?

**A. 2**

**B. 3**

**C. 4**

**D. 5**

**A perfect square is a number that can be expressed as the product of an integer multiplied by itself. In this case, the number 4 fits this definition perfectly since it can be calculated as 2 multiplied by 2 (2 × 2 = 4), making it the square of the integer 2. The other numbers listed—2, 3, and 5—cannot be expressed as the square of any integer. They do not result from multiplying an integer by itself. Thus, 4 is the only number among the choices that qualifies as a perfect square, confirming that it is the correct answer.**

## 8. What is the value of the expression 3^2 + 4^2?

**A. 25**

**B. 26**

**C. 27**

**D. 28**

**To find the value of the expression 3^2 + 4^2, we first need to evaluate each term separately. Calculating 3^2, we find that it means 3 multiplied by itself: 3 × 3 = 9. Next, we calculate 4^2 in a similar manner: 4 × 4 = 16. Now that we have both squares, we can add them together: 9 (from 3^2) + 16 (from 4^2) = 25. Thus, the value of the expression 3^2 + 4^2 is 25, confirming that the value is correct. The options provided include values greater than 25, which would not be a result of the addition of the squares of 3 and 4.**

## 9. What is the probability of rolling a 3 on a standard six-sided die?

**A. 1/6**

**B. 1/3**

**C. 1/2**

**D. 1/4**

**To determine the probability of rolling a 3 on a standard six-sided die, it's important to understand the basic principles of probability. A standard six-sided die has six faces, each showing one of the numbers from 1 to 6. When you roll the die, each face has an equal chance of landing face up. The specific event we are interested in is rolling a 3. Since there is only one face of the die that shows the number 3, this event can be described as having one favorable outcome. To calculate the probability, you take the number of favorable outcomes (in this case, rolling a 3, which is 1) and divide it by the total number of possible outcomes (which is 6, as there are six faces on the die). Therefore, the probability can be calculated as: Probability of rolling a 3 = Number of favorable outcomes / Total number of outcomes = 1 / 6 This results in a probability of 1/6 for rolling a 3, which aligns with the answer provided. Understanding this calculation reinforces the concept of equal likelihood for each outcome when rolling a fair die.**

## 10. How many degrees does a right triangle contain at least?

**A. Less than 90 degrees**

**B. Exactly 180 degrees**

**C. Exactly 90 degrees**

**D. More than 90 degrees**

**A right triangle is defined by one of its angles being exactly 90 degrees. This characteristic is what distinguishes it from other types of triangles. The sum of all angles in any triangle must equal 180 degrees. Therefore, in a right triangle, with one angle being 90 degrees, the other two angles must add up to 90 degrees as well. This means that a right triangle inherently contains and must include an angle measuring exactly 90 degrees, making this option the most accurate description of the triangle's properties. The other descriptions do not accurately reflect the nature of a right triangle. One of the defining traits of a right triangle is its 90-degree angle, aligning precisely with the correct answer.**