

SAMPLE QUESTIONS FOR THE MATH PROFICIENCY EXAM

The exam will have 20-25 questions. Maximum time allowed will be 3 hours. You will need a calculator with the capability of raising numbers to powers; graphing calculators, however, will not be allowed. No credit will be given unless work is shown and an answer stated. Suggested areas of study include number theory, the real number system, equations and inequalities, graphs functions, linear systems, consumer mathematics, measurement, geometry, counting methods, probability, and statistics.

1. Jill's parents believe they will need \$100,000 in order to pay for Jill's college education. How many dollars must Jill's parents invest on her first birthday in order to have \$100,000 on her 18th birthday, if the interest rate is $5\frac{1}{4}\%$ and interest is compounded quarterly?

Answer: \$41,201.57

2. Find the area of a rectangular swimming pool that is 20 feet 4 inches by 37 feet 5 inches. Express your answer correctly to the nearest square foot.

Answer: 761 sq. feet

3. A college identification number consists of a letter followed by four digits. How many different identification numbers are possible if repetition is not permitted?

Answer: 131,040

4. The price of a house is \$125,000. The bank requires a 20% down payment and three points at the time of closing. The cost of the house is financed with a 30-year fixed-rate mortgage of 7%. The monthly payments are \$665.

- a. Find the required down payment. **Answer: \$25,000**
- b. Find the amount of the mortgage. **Answer: \$100,000**
- c. How much must be paid for the three points at closing?
Answer: \$3,000
- d. Find the total cost of interest over 30 yrs. **Answer: \$139,400**

5. A student scores 230 on a math test and 540 on a reading comprehension test. The math test has a mean of 200 and a standard deviation of 10. The reading comprehension test has a mean of 500 and a standard deviation of 15. If the data for both tests are normally distributed, on which test did the student have the better score? Show work to support your answer.

Answer: Math Test

6. Solve: $\frac{10-2m}{21} < \frac{25}{14}$

Answer: $m > -\frac{55}{4}$

7. Solve for P: $x = \frac{2\pi - 3P}{A} - y$

Answer: $P = \frac{2\pi - Ax - Ay}{3}$

8. Solve: $2x^2 + 10 = 9x$

Answer: $x = \frac{5}{2}, 2$

9. The hour hand of a clock moves from 12 to 5 o'clock. Through how many degrees does it move?

Answer: 150°