

MATH 6: HANDOUT II
REVIEW OF MATH 5

This week we will continue our review of Math 5.

1. SQUARE ROOTS

1. Find the following square roots. If you can not find the number exactly, at least say between which two whole numbers the answer is, e.g., between 5 and 6.

$$\sqrt{25} =$$

$$\sqrt{64} =$$

$$\sqrt{10,000} =$$

$$\sqrt{10^8} =$$

$$\sqrt{52} =$$

2. Recall that taking the square root is equivalent to taking a number to its “half power”. In other words, $\sqrt{a} \equiv a^{1/2}$. Using this, find the following roots:

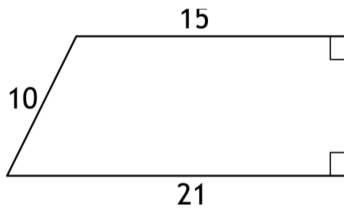
$$\sqrt{2^6 \times 7^2} =$$

$$\sqrt{\frac{4}{25}} =$$

$$\sqrt{1/3^4} =$$

2. PYTHAGOREAN THEOREM

3. Find the height and area of the figure below. Lengths of three sides are given; the two marked angles are right angles.



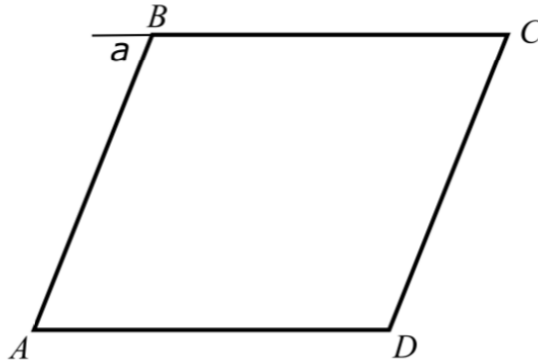
4. The side of an equilateral triangle is 1 *m*. Find its height and the area.

3. PERMUTATIONS, COMBINATIONS, AND PROBABILITY

5. A license plate consists of three letters, followed by three digits. How many possible license plates are there?
6. Suppose that you want to organize 6 students, so you ask them to form a single line. In how many different ways can you order the students in this line?
7. Suppose we roll two identical die simultaneously. What is the probability of getting a 1 and a 3?
8. If we toss a coin 5 times, what is the probability that **at least one** will be heads?

4. GEOMETRY

9. Show that in a parallelogram, diagonally opposite angles are equal. That is, show that $\angle A = \angle C$ and $\angle B = \angle D$ in the figure below.



10. If we know that $\angle A = 60^\circ$ in the above parallelogram, find the value of $\angle B$, $\angle C$, and $\angle D$.
11. Consider an ISOSCELES triangle $\triangle ABC$ in which $AB = BC$. Let M be the midpoint of side AC ; that is, $AM = MC$.
- Show that triangles $\triangle ABM$ and $\triangle CBM$ are congruent.
 - Show that angles $\angle A$ and $\angle C$ are equal.

