

DICK SCHAFF SUPERBOWL XLIV
2017 Junior High School Bomb Exam – Page 1 of 5

School _____ Team _____

Team Members 1. _____ 2. _____

3. _____ 4. _____ 5. _____

- Directions:** (1) Label answers with appropriate units.
(2) Do not round or approximate answers.
(3) Write fully simplified answers on the lines provided.

1. Find the digit that is in the one's place in the value of the following expression:

$$2^{2017} + 0^{2017} + 1^{2017} + 7^{2017}$$

Ans: _____

2. Find the square root of $\sqrt{16^{16}w^{16}}$.

Ans: _____

3. What is the reciprocal of the average of $\frac{1}{5}$ and $\frac{2}{3}$?

Ans: _____

4. If a circle is inscribed in a square, as shown below, and the radius of the circle is 2.5 inches, what is the perimeter of the square?



Ans: _____

5. Imagine a standard 6-sided die with each of its six faces painted in any of six different colors. In how many different ways may the six colors be arranged?

Ans: _____

DICK SCHAFF SUPERBOWL XLIV
2017 Junior High School Bomb Exam – Page 2 of 5

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1. Assuming fair coins, if you toss 6 pennies what is the probability of getting 3 heads and 3 tails?

Ans: _____

2. There are 20 people at a meeting. If each person shakes hands with each other person, how many handshakes are there?

Ans: _____

3. Evaluate $1 \div \frac{2}{3} \div \frac{2}{3} \times \frac{1}{3}$

Ans: _____

4. Two friends are playing a card game in which the winner of each round wins \$1. When they have finished, one of them has won three games, while the other has a net profit of \$7. How many games did they play?

Ans: _____

5. If you were to fill in the multiplication table shown below, what would the sum of all the numbers *inside* the table be?

×	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

Ans: _____

DICK SCHAFF SUPERBOWL XLIV
2017 Junior High School Bomb Exam – Page 3 of 5

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1. Express as a common fraction in reduced form: $\sqrt{0.4}$

Ans: _____

2. How many four-digit numbers are perfect squares?

Ans: _____

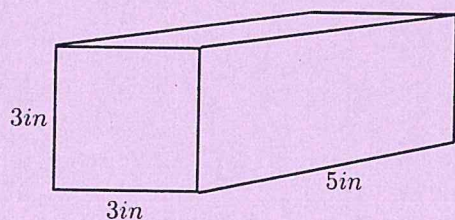
3. If the perimeter of a triangle is tripled in length, by what factor is the area of the triangle increased?

Ans: _____

4. A number is *decreasing* if each digit is less than the digit that comes before it. For example 321 and 94 and 8752 are all decreasing. How many two-digit numbers are decreasing?

Ans: _____

5. Find the surface area of the rectangular prism shown below.



Ans: _____

DICK SCHAFF SUPERBOWL XLIV
2017 Junior High School Bomb Exam – Page 4 of 5

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1. Four distinct integers are added together in pairs to produce the numbers 0, 1, 4, 5, 8, 9. Find the largest of the four integers that give rise to this set.

Ans: _____

2. $HA^2 = RSH$ is a *cryptarithm*, which means it is a puzzle in which each letter stands for a single digit; different letters represent different digits, and if a letter is repeated it represents the same digit each time it appears. What is the three-digit number represented by RSH ?

Ans: _____

3. Solve for x : $27^{x-1} = 9^{x+1}$

Ans: _____

4. What is the largest three digit number with an odd number of distinct positive factors?

Ans: _____

5. A boy says, "I have as many brothers as sisters." His sister says, "I have twice as many brothers as sisters." How many of the siblings are girls?

Ans: _____

DICK SCHAFF SUPERBOWL XLIV
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- Directions:** (1) Label answers with appropriate units.
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1. What is the largest two-digit prime number each of whose digits is also a prime number?

Ans: _____

2. A hiker went up a hill at a rate of $1\frac{1}{2}$ miles per hour. He came down the same hill at a rate of $4\frac{1}{2}$ miles an hour. If he did not stop at all, and the whole hike took him 6 hours, how many miles is it to the top of the hill?

Ans: _____

3. If you roll three fair six-sided dice, what is the probability that the product of the three numbers rolled is prime?

Ans: _____

4. If $f(x) = x^2 - x$, find $f(f(-2))$.

Ans: _____

5. What day is it one million seconds from Tuesday at noon?

Ans: _____