Name _____

1. _____

2. _____

3. _____

1. [3] If 4 horses eat 4 bales of hay in 4 days, how many days will it take 20 horses to eat 30 bales of hay?

2. [3] For how many positive integers x is $x^2 + 6x + 9$ between 20 and 40?

3. [3] at is the value of
$(26^2 – 24^2 – 10)^2 – 10^2$?

Name _____

4. _____

5. _____

6. _____

4. [4] A square and a triangle have the same area. If the square has a side length of 6 units and the triangle has a base of 8 units, what is the length, in units, of the altitude to that base of the triangle?

5. [4] Asha has 5 more 40-cent stamps than 30-cent stamps. The total value of her 40-cent stamps is $5.20 more than that of her 30-cent stamps. How many of the 40-cent stamps does Asha have?

6. [4] The cost of a meal at a restaurant was $15 before tax and tip. If the 7% tax and an 18% tip are each based solely upon the cost of the meal, what is the total cost in dollars of the meal, tax and tip? Express your answer as a decimal to the nearest hundredth.

Name _____

7. _____

8. _____

9. _____

7. [6] What is the sum of all positive two-digit odd integers?

8. [6] The whole number N is divisible by 7. If N is divisible by 2 or 3 or 4 or 5, the remainder is 1 in each case. What is the smallest value that N can be?

9. [6] The product of two consecutive positive even integers is 288. What is the greater of the two integers?

Name _____

10. _____

11. _____

12. _____

10. [7] The side lengths of a triangle are 14 cm, 48 cm and 50 cm. How many square centimeters are in the area of the triangle?

11. [7] What is the greatest integer value of n such that 25! is divisible by 10^n?

12. [7] Let N be the sum of all the even factors of $(2018 * 2018 - 4)/2020$. Find the sum of all the odd factors of N.

Name _____

13. _____

14. _____

15. _____

13. [8] Let ABCD be a regular hexagon of side length 2018.Find the ratio of the area of its inscribed circle to the area of its circumscribed circle.

14. [8] Let ABC be a triangle with AB=13, BC=14, CA=15. Find triangle's area.

15. [8] Lin has 8 marbles. Each marble weighs either 20 grams or 40 grams or 50 grams. He has a different number of marbles (at least one) of each weight. What is the smallest possible total weight of Lin's marbles.

Name _____

16. _____

17. _____

18. _____

16. [10] Two standard dice (number cubes) are rolled. One is red and one is green. What is the probability that the product of the two numbers on top is divisible by 3?

17. [10] The pages of a book are numbered consecutively, starting with page 1. It takes 258 digits to number all the pages. What is the last page number?

18. [10] Janine's number has three digits. One digit is a prime number. Another digit is a square number. The other digit is neither prime nor square. Her number is not divisible by 3. That is the greatest possible value of Janine's number?

Name _____

19. _____

20. _____

21. _____

19. [12] Find the largest prime factor of 3^12+8^2.

20. [12] The top of a rectangular box is 15 by 20 and its height is 4. An ant begins at one corner of the box and walks along the edges. It touches all eight corners. What is the shortest distance that the ant may travel?

21. [12] We have two externally tangent circles, with one having double the radius of the other. If the radius of the smaller circle is x, and the length of their external tangent is 12, find x.

Answer Key:

1. 6
2. 2
3. 8000
4. 9
5. 37
6. 18.75
7. 2475
8. 301
9. 18
10. 336
11. 6
12. 448
13. ¾
14. 84
15. 230
16. 5/9
17. 122
18. 985
19. 37
20. 66
21. 3sqrt(2)