Whatcom County Math Championship – 2017
Individual – 4th Grade

1. If a cube has a volume of 1728, what is the surface area?

2. Calculate the following: 9 – 4(12 + 3)

3. Jamaal gave the store clerk at Vowell's Books a $5 bill and got back a quarter, two dimes and three pennies in change. How much was his purchase?

4. Write 2.48 as an improper reduced fraction in the form a/b.

5. If Luna rolls two six-sided dice and adds the results, what is the probability that she will get a 6? **Write your answer as a reduced fraction.**

6. What is the remainder when 2017 is divided by 17?

7. N is a two-digit number that has a remainder of 1 when divided by 5, a remainder of 2 when divided by 7, and a remainder of 3 when divided by 4. What is N?

8. If eight more than three times a number is 119, what is the number?

9. What is the greatest common divisor of 180, 192, and 432?

10. Write as a simplified fraction in lowest terms: $\frac{42}{11} \times \frac{39}{12} \times \frac{36}{13} \times \frac{33}{14}$

11. What is the next term in this sequence: 3, –15, 27, ___?

12. What is the sum of the positive factors of 84?

13. How many positive whole numbers less than 200 are both square and cube numbers?

14. A bag has 4 pennies, 3 nickels, 8 dimes and 9 quarters in it. If a coin is pulled out at random, what is the probability that the coin's value is divisible by five? **Write your answer as a reduced fraction.**

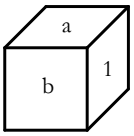
15. What is the median of the positive factors of 120?

16. Jyn is riding to Seattle when she notices that it takes 48 seconds to travel a mile. How fast is Jyn going in miles per hour?

17. Raki arranges the digits 1, 3, 5 and 7 to write a four-digit number. The 3 is next to the 1 but not next to the 5. The 7 is next to the 3 but not next to the 1. The four-digit number is divisible by 5. What is Raki's number?

18. Jay has $96 in her bank account. She deposits $7 at the end of each week. Kay has $256 in her account, and she withdraws $3 at the end of each week. At the end of how many weeks will they have the same amount in their accounts?

19. The cube shown has a different whole number from 1 through 6 written on each of its faces. The sum of the numbers on each pair of opposite faces is 7. Find the greatest value of a + b.



20. How many perfect squares are there between 10^3 and 10^5?

21. Two sides of a rectangle are 9 and 16. How long is the diagonal? **Round your answer to the nearest hundredth.**

22. How many different sums can be obtained by adding any two different integers chosen from these twenty-five consecutive integers?

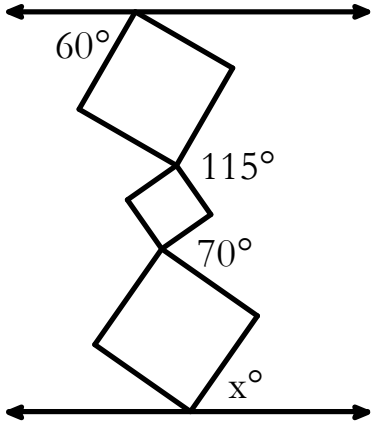
–12, –11, –10, …, –1, 0, 1, … 10, 11, 12

23. Tanya read the first 81 pages of her book in an hour and 48 minutes. She figured out that she had finished 3/16 of her book. How many more minutes will it take for her to finish the book?

24. If $\frac{1}{a} - \frac{1}{b} = \frac{1}{30}$, what is a + b?

25. A bicycling club has 2/9 children under 10, 2/3 children 10 and over, and 3 adults. How many people are in the club altogether?

26. Three squares lie between two parallel lines; what is the measure of angle x?



27. The tortoise is driving a car at 45 miles per hour, and starts 5 miles ahead of Achilles, who is driving at 60 miles per hour. How many minutes will it take Achilles to catch up with the tortoise?

28. Drake's Ice Cream offers 12 flavors of ice cream and 8 flavors of milk-free sorbet. If Ella and Ivy each get two different scoops, Ella of ice cream and Ivy of sorbet, how many different combinations could they buy?

29. Find the whole number value of n: $\frac{5}{108} < \frac{1}{n} < \frac{4}{81}$

30. 72% of what number is 54?

Whatcom County Math Championship – 2017
Individual – 5th Grade

1. What is the remainder when 2017 is divided by 17?

2. N is a two-digit number that has a remainder of 1 when divided by 5, a remainder of 2 when divided by 7, and a remainder of 3 when divided by 4. What is N?

3. If eight more than three times a number is 119, what is the number?

4. What is the greatest common divisor of 180, 192, and 432?

5. Write as a simplified fraction in lowest terms: $\frac{42}{11} \times \frac{39}{12} \times \frac{36}{13} \times \frac{33}{14}$

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8. How many positive whole numbers less than 200 are both square and cube numbers?

9. A bag has 4 pennies, 3 nickels, 8 dimes and 9 quarters in it. If a coin is pulled out at random, what is the probability that the coin's value is divisible by five? **Write your answer as a reduced fraction.**

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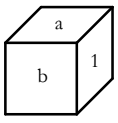

15. How many perfect squares are there between 10^3 and 10^5?

16. Two sides of a rectangle are 9 and 16. How long is the diagonal? **Round your answer to the nearest hundredth.**

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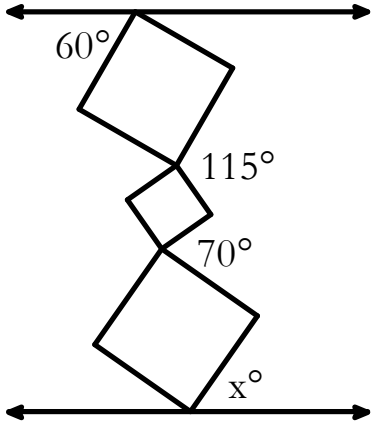

22. The tortoise is driving a car at 45 miles per hour, and starts 5 miles ahead of Achilles, who is driving at 60 miles per hour. How many minutes will it take Achilles to catch up with the tortoise?

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25. 72% of what number is 54?

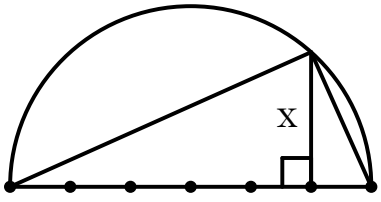
26. If the sum of the edge lengths of a cube is equal to the surface area of that cube, what is the volume of the cube?

27. The first four triangular numbers are 1, 3, 6 and 10. What is the sum of the first 10 triangular numbers?

28. What is the slope of a line perpendicular to a line passing through the points (13, 1) and (–9, 3)?

29. Fat π Pizza offers a large Euclidean style pizza that is circular and 9 inches in diameter. They also offer a non-Euclidean style pizza that has the same area but is square. What is the diagonal of this pizza? **Round your answer to the nearest tenth.**

30. The dots on the diameter of the semicircle are evenly spaced. How long is x? **Round your answer to the nearest hundredth.**



Whatcom County Math Championship – 2017
Individual – 6th Grade

1. What is the next term in this sequence: 3, –15, 27, ___?

2. What is the sum of the positive factors of 84?

3. How many positive whole numbers less than 200 are both square and cube numbers?

4. A bag has 4 pennies, 3 nickels, 8 dimes and 9 quarters in it. If a coin is pulled out at random, what is the probability that the coin's value is divisible by five? **Write your answer as a reduced fraction.**

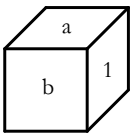
5. What is the median of the positive factors of 120?

6. Jyn is riding to Seattle when she notices that it takes 48 seconds to travel a mile. How fast is Jyn going in miles per hour?

7. Raki arranges the digits 1, 3, 5 and 7 to write a four-digit number. The 3 is next to the 1 but not next to the 5. The 7 is next to the 3 but not next to the 1. The four-digit number is divisible by 5. What is Raki's number?

8. Jay has $96 in her bank account. She deposits $7 at the end of each week. Kay has $256 in her account, and she withdraws $3 at the end of each week. At the end of how many weeks will they have the same amount in their accounts?

9. The cube shown has a different whole number from 1 through 6 written on each of its faces. The sum of the numbers on each pair of opposite faces is 7. Find the greatest value of a + b.



10. How many perfect squares are there between 10^3 and 10^5?

11. Two sides of a rectangle are 9 and 16. How long is the diagonal? **Round your answer to the nearest hundredth.**

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–12, –11, –10, …, –1, 0, 1, … 10, 11, 12

13. Tanya read the first 81 pages of her book in an hour and 48 minutes. She figured out that she had finished 3/16 of her book. How many more minutes will it take for her to finish the book?

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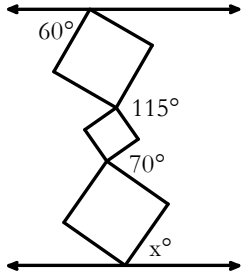

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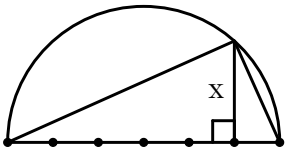

26. If Luna rolls two six-sided dice and adds the results, what is the probability that she will get either a 8 or a 6? **Write your answer as a reduced fraction.**

27. What is the ratio for this geometric sequence: $\frac{3}{500}, \frac{6}{250}, \frac{12}{125} \ldots$?

28. At Vowell's City of Books, each floor is divided into a number of rooms, and the number of rooms is equal to the sum of the number of rooms in the three floors below it. The first three floors have 1, 2, and 4 rooms, and no floor has more than 100 rooms. How many floors does Vowell's have?

29. At 12:00, the hour and minute hands of a clock are lined up exactly. To the nearest second, at what time will they first by 90° apart?

30. Jan shoots free throws at a rate of 85%. What is the smallest number of free throws Jan would have to shoot for the probability of her making all of them to be below 15%?

Whatcom County Math Championship – 2017
Individual – 7th + 8th Grade

1. Jyn is riding to Seattle when she notices that it takes 48 seconds to travel a mile. How fast is Jyn going in miles per hour?

2. Raki arranges the digits 1, 3, 5 and 7 to write a four-digit number. The 3 is next to the 1 but not next to the 5. The 7 is next to the 3 but not next to the 1. The four-digit number is divisible by 5. What is Raki's number?

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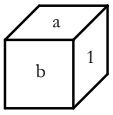

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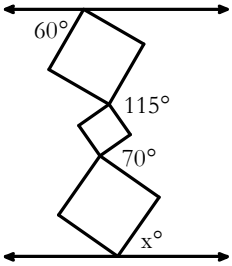

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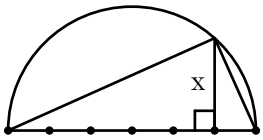

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25. Jan shoots free throws at a rate of 85%. What is the smallest number of free throws Jan would have to shoot for the probability of her making all of them to be below 15%?

26. What is the area between the graph of the equation $y = -2 \cdot |x - 5| + 6$ and the x – axis?

27. The product of three consecutive numbers is 19656. What is the middle number?

28. If φ(n) is the number of positive factors of n (for example φ(6) = 4), what is the smallest three-digit number for which φ(n) > 12?

29. Raoul rolls an n-sided die twice and adds the results together. What value of n will give the highest probability that Raoul will get a 10?

30. What fraction of the smaller circle is shaded? **Round your answer to the nearest hundredth.**