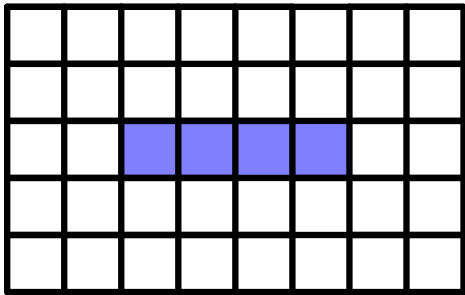


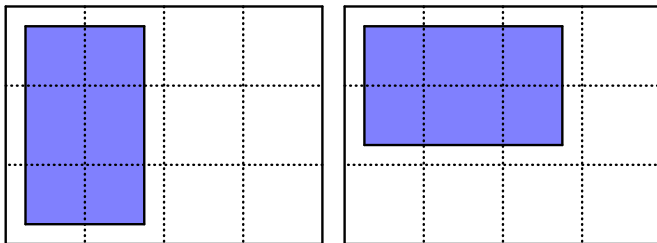
Whatcom County Math Championship – 2017

Potpourri – 4th Grade

1. The number 6 has exactly four factors: 1, 2, 3, and 6. How many counting numbers less than 20 have exactly two different factors?
2. What percent of 85 is 10.2?
3. How many powers of 3 are there between 2^3 and 2^9 ?
4. A single row of grey tiles is surrounded by a double layer of white tiles (in the example below, there are 4 grey tiles). If there were 180 white tiles, how many grey tiles would there be?



5. Mrs. Fibonacci says that she turned eleventy-one (111) yesterday, but only if you are counting in base B. If she really turned 43 in base 10, what base B was she thinking of?
6. Shawn starts counting backwards out loud from 1,000,000 by elevens. What is the first two digit number he says?
7. There are seven ways a 3×2 block can be placed inside a rectangle measuring 3×4 . How many ways can a 3×2 block be placed inside a rectangle measuring 6×8 ?

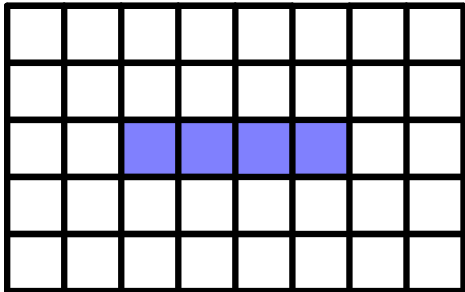


8. The final bill for the Beaudelaire's dinner, including a 20% tip, was \$96. What was the total cost of the dinner before the tip was added?
9. What is the smallest multiple of nine that contains only even digits.
10. The digits in the number, 42, add to six. There are exactly six 2-digit numbers with this property: 15, 24, 33, 42, 51, and 60. How many 3-digit numbers exist for which the sum of the digits is six?

Whatcom County Math Championship – 2017

Potpourri – 5th Grade

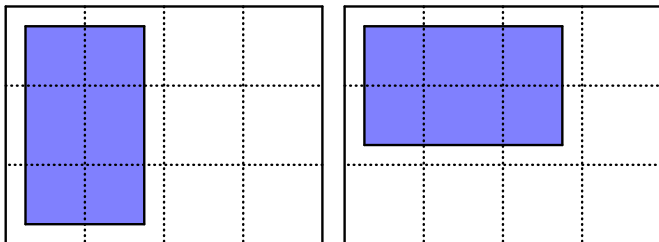
1. A single row of grey tiles is surrounded by a double layer of white tiles (in the example below, there are 4 grey tiles). If there were 180 white tiles, how many grey tiles would there be?



2. Mrs. Fibonacci says that she turned eleventy-one (111) yesterday, but only if you are counting in base B. If she really turned 43 in base 10, what base B was she thinking of?

3. Shawn starts counting backwards out loud from 1,000,000 by elevens. What is the first two digit number he says?

4. There are seven ways a 3 x 2 block can be placed inside a rectangle measuring 3 x 4. How many ways can a 3 x 2 block be placed inside a rectangle measuring 6 x 8?



5. The final bill for the Beaudelaire's dinner, including a 20% tip, was \$96. What was the total cost of the dinner before the tip was added?

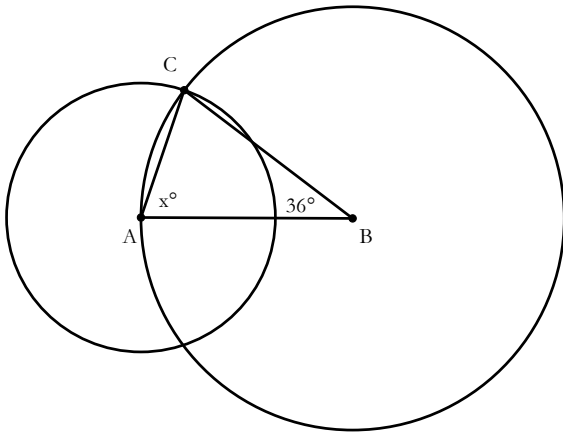
6. What is the smallest multiple of nine that contains only even digits.

7. The digits in the number, 42, add to six. There are exactly six 2-digit numbers with this property: 15, 24, 33, 42, 51, and 60. How many 3-digit numbers exist for which the sum of the digits is six?

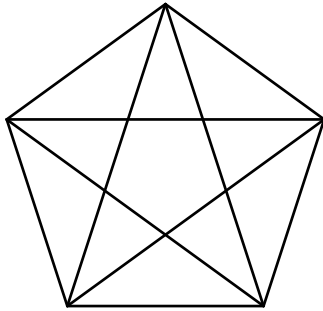
8. If A, B and C each represent different digits, find the value of C in this calculation:

$$\begin{array}{r} A \ B \\ - \underline{B \ A} \\ C \ 4 \end{array}$$

9. In the figure below, A and B are the centers of circles and $\angle ABC$ is 36° . What is the measure of x ?



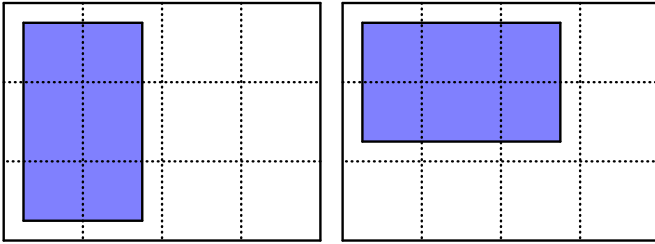
10. How many triangles of all sizes are there in the figure below?



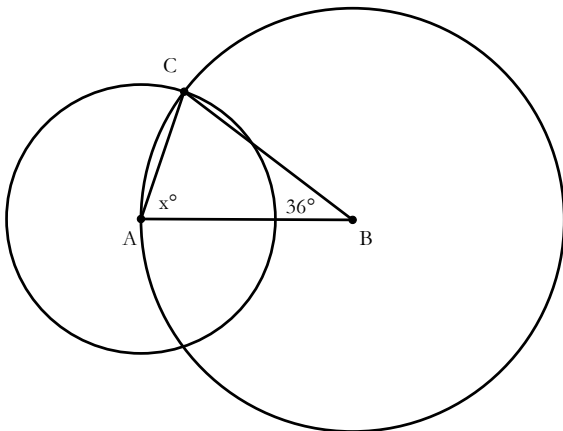
Whatcom County Math Championship – 2017

Potpourri – 6th Grade

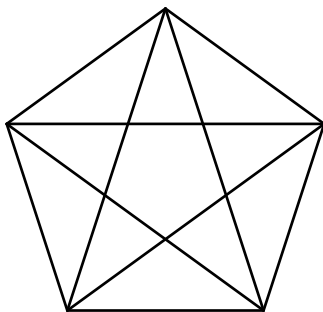
1. There are seven ways a 3×2 block can be placed inside a rectangle measuring 3×4 . How many ways can a 3×2 block be placed inside a rectangle measuring 6×8 ?



2. The final bill for the Beudelaire's dinner, including a 20% tip, was \$96. What was the total cost of the dinner before the tip was added?
3. What is the smallest multiple of nine that contains only even digits.
4. The digits in the number, 42, add to six. There are exactly six 2-digit numbers with this property: 15, 24, 33, 42, 51, and 60. How many 3-digit numbers exist for which the sum of the digits is six?
5. If A, B and C each represent different digits, find the value of C in this calculation:
- $$\begin{array}{r} A \ B \\ - B \ A \\ \hline C \ 4 \end{array}$$
6. In the figure below, A and B are the centers of circles and $\angle ABC$ is 36° . What is the measure of x ?



7. How many triangles of all sizes are there in the figure below?



8. What is the smallest integer n for which $4^n > 2017$?
9. Alexa gives $\frac{1}{2}$ of her marbles to Birch, who gives $\frac{2}{3}$ of what she receives to Celia, who gives $\frac{3}{4}$ of what she receives to Darla. If each girl has a whole number of marbles, what is the fewest number of marbles that Alexa could have started with?
10. A palindrome is a number, like 535, that remains the same when its digits are reversed. Find the sum of all 3 digit palindromes.

Whatcom County Math Championship – 2017

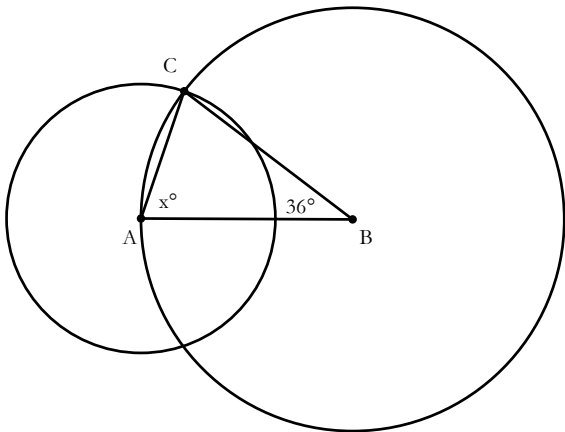
Potpourri – 7th + 8th Grade

1. The digits in the number, 42, add to six. There are exactly six 2-digit numbers with this property: 15, 24, 33, 42, 51, and 60. How many 3-digit numbers exist for which the sum of the digits is six?

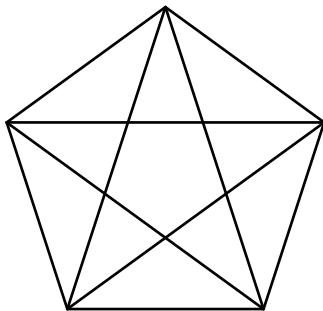
2. If A, B and C each represent different digits, find the value of C in this calculation:

$$\begin{array}{r} A\ B \\ - B\ A \\ \hline C\ 4 \end{array}$$

3. In the figure below, A and B are the centers of circles and $\angle ABC$ is 36° . What is the measure of x ?



4. How many triangles of all sizes are there in the figure below?

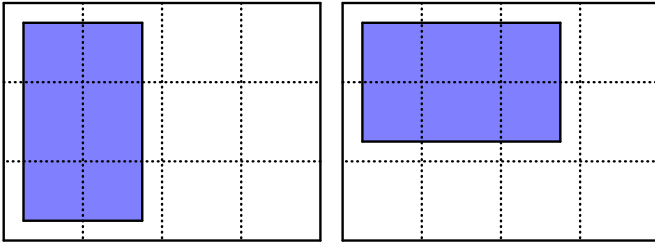


5. What is the smallest integer n for which $4^n > 2017$?

6. Alexa gives $\frac{1}{2}$ of her marbles to Birch, who gives $\frac{2}{3}$ of what she receives to Celia, who gives $\frac{3}{4}$ of what she receives to Darla. If each girl has a whole number of marbles, what is the fewest number of marbles that Alexa could have started with?

7. A palindrome is a number, like 535, that remains the same when its digits are reversed. Find the sum of all 3 digit palindromes.

8. There are seven ways a 3×2 block can be placed inside a rectangle measuring 3×4 . If there are 82 ways to place a 3×2 block in an $m \times n$ rectangle, and $m + 2 = n$, what is $m + n$?



9. Mrs. Fibonacci says that she turned eleventy-one (111) yesterday, but only if you are counting in base B. If she really turned 45 in base 10, what base B was she thinking of? **Round your answer to the nearest hundredth.**

10. From a deck of 52 cards, how many 5-card hands can be formed that have at least 3 face cards (jack, queen, king)?