Whatcom County Math Championship – 2012
Potpourri – 4th Grade

1. What is the least common multiple of 9 and 12?

2. When Hermione, Edmund, Meg and Violet stand in line, Hermione stands in front of Edmund, Violet stands in front of Meg, Edmund and Violet will not stand next to each other, and Meg is behind Edmund. Who is at the front of the line?

3. In the school cafeteria there are square tables, and 4 kids can sit around them (figure 1 below). If you push two tables together, you can sit 6 kids around them (figure 2 below). If you keep pushing tables together in the same pattern, how many tables will you need to seat 40 kids around the tables?
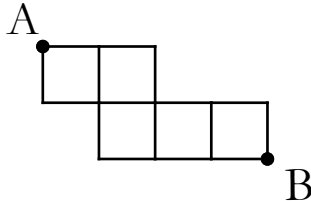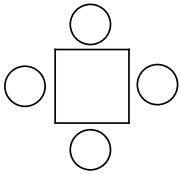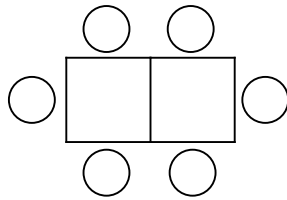
figure 1   **figure 2**

4. Find the sum of the next three numbers in this sequence:
        2, –2, 4, –6, 10, –16, 26, –42…

5. Find the least whole number **n** greater than 60 for which both of the following conditions are true:
a)   **n** divided by 3 leaves a remainder of 1
b)   **n** divided by 5 leaves a remainder of 3

6. Ani was rolling two fair six-sided dice, one green and one red. If she subtracts the number on the green die from the number on the red die, how many negative answers are possible for her to roll?

7. Alanna is counting backwards from 10,000,000 by 9s. What is the first negative number she reaches?

8. The Lucas numbers are those that start with 1, 3, 4, 7, 11, 18…. How many Lucas numbers are there between 2012 and 10,000?

9. How many 3 digit numbers are there that have the middle digit as the average of the first digit and the last digit (like 852)?

10. Which is bigger, a) half of a half of a half of a half of a half, or b) half of a third of a fifth?

Whatcom County Math Championship – 2012
Potpourri – 5th Grade

1. Find the sum of the next three numbers in this sequence:
   2, –2, 4, –6, 10, –16, 26, –42…

2. Find the least whole number **n** greater than 60 for which both of the following conditions are true:
a)   **n** divided by 3 leaves a remainder of 1
b)   **n** divided by 5 leaves a remainder of 3

3. Ani was rolling two fair six-sided dice, one green and one red. If she subtracts the number on the green die from the number on the red die, how many negative answers are possible for her to roll?

4. Alanna is counting backwards from 10,000,000 by 9s. What is the first negative number she reaches?

5. The Lucas numbers are those that start with 1, 3, 4, 7, 11, 18…. How many Lucas numbers are there between 2012 and 10,000?

6. How many 3 digit numbers are there that have the middle digit as the average of the first digit and the last digit (like 852)?

7. Which is bigger, a) half of a half of a half of a half of a half, or b) half of a third of a fifth?

8. How many ways can you travel from A to B along the grid, moving only right or down?

9. Write $(9 \times 10^2) + (2 \times 10^0) + (7 \times 10^{-2})$ in standard form.

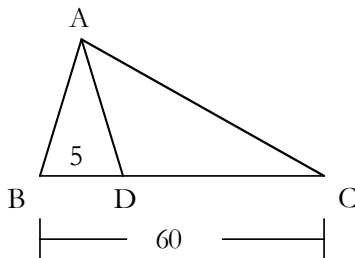10. In the prime factorization of 840, how many total factors are there?
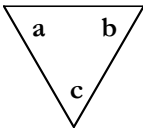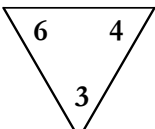
Whatcom County Math Championship – 2012
Potpourri – 6th Grade

1. Alanna is counting backwards from 10,000,000 by 9s. What is the first negative number she reaches?

2. The Lucas numbers are those that start with 1, 3, 4, 7, 11, 18…. How many Lucas numbers are there between 2012 and 10,000?

3. How many 3 digit numbers are there that have the middle digit as the average of the first digit and the last digit (like 852)?

4. Which is bigger, a) half of a half of a half of a half of a half, or b) half of a third of a fifth?

5. How many ways can you travel from A to B along the grid, moving only right or down?
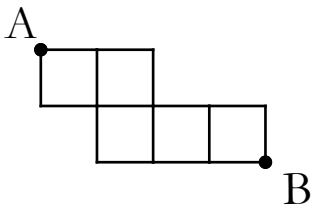
6. Write $(9 \times 10^2) + (2 \times 10^0) + (7 \times 10^{-2})$ in standard form.

7. In the prime factorization of 840, how many total factors are there?

8. The area of triangle ABC below is 90 sq. cm. Point D is on the line segment $\overline{BC}$, and the length of $\overline{BD}$ is 5 cm. What is the area of the triangle ADC, in square centimeters?
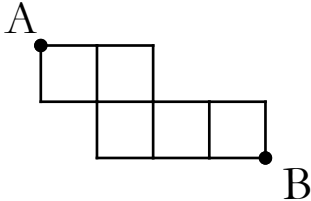

9. Define as $\dfrac{a \times b + c}{a + b \times c}$. Find the value of as a reduced fraction.

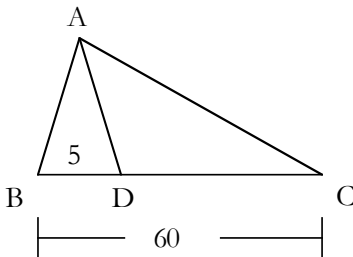10. What is the next number in this pattern, as a reduced fraction: $\dfrac{1}{8}, \dfrac{2}{7}, \dfrac{1}{2}, \dfrac{4}{5}, \underline{\quad\quad}$?

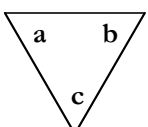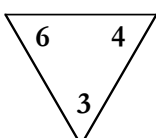# Whatcom County Math Championship – 2012
Potpourri – 7th + 8th Grade

1. Which is bigger, a) half of a half of a half of a half of a half, or b) half of a third of a fifth?

2. How many ways can you travel from A to B along the grid, moving only right or down?

A

B

3. Write $(9 \times 10^2) + (2 \times 10^0) + (7 \times 10^{-2})$ in standard form.

4. In the prime factorization of 840, how many total factors are there?

5. The area of triangle ABC below is 90 sq. cm. Point D is on the line segment $\overline{BC}$, and the length of $\overline{BD}$ is 5 cm. What is the area of the triangle ADC, in square centimeters?

A

5

B   D   C

60

6. Define [triangle a b c] as $\dfrac{a \times b + c}{a + b \times c}$. Find the value of [triangle 6 4 3] as a reduced fraction.

7. What is the next number in this pattern, as a reduced fraction: $\dfrac{1}{8}, \ \dfrac{2}{7}, \ \dfrac{1}{2}, \ \dfrac{4}{5},$ _____?

8. Evaluate $\dfrac{2^{256}}{2^{250}}$.

9. If you solve $x^3 = x$ and add all the solutions, what is the sum?

10. Find the least whole number **n** greater than 30 for which
a)   **n** divided by 7 leaves a remainder of 1
b)   **n** divided by 13 leaves a remainder of 3