

# Junior High Math League

## Sample Questions by Meet and Topic

### Meet 1:

- 1.1 Common Factors and Multiples
- 1.2 Evaluating Expressions
- 1.3 Manipulating Fractions and Decimals
- 1.4 Understanding Ratios
- 1.5 Translating Verbal Statements
- 1.6 Area and Perimeter of 2-D Shapes
- 1.7 The Coordinate Plane
- 1.8 Measures of Central Tendency
- 1.9 Logic Problems

(All sample questions were taken from previous JH Math League meets. Please contact Bill Theisen at [btheisen@isd2899.k12.mn.us](mailto:btheisen@isd2899.k12.mn.us) with any questions regarding the sample questions and answers.)

# 1.1 Common Factors and Multiples - Questions

9/23/2020

+ 1) List all prime numbers between 160 and 170.

prime numbers: 2, 3, 5, 7, ...  
 11, 13, 17, 19, 23, ...  
 160 x even  
 $161 = 7 \times 23$   
 162 x even  
 163 prime  
 164 x even  
 165 x 5  
 166 x even  
 167 prime  
 168 x even  
 $169 = 13^2$   
 170 x even

Recommendation: Know the first 50 prime numbers  
 (50th one is 229)

+ 2) Which integers between 50 and 60 are prime?

50 x	54 x	58 x
51 x $\div 3$	55 x	59
52 x	56 x	60 x
53	57 x $\div 3$	

3) What is the greatest common factor between 78 and 84?

4) How many factors does 180 have?

5) Factor 2100 into primes of the appropriate power.

6) If a number is divisible by 12, it must also be divisible by what other integers, other than 1 and itself?

7) Factor 456 into primes of the appropriate power.

# 1.1 Common Factors and Multiples - Answers

9/23/2020 + 1) List all prime numbers between 160 and 170.

**163, 167**

+ 2) Which integers between 50 and 60 are prime?

**53, 59**

3) What is the greatest common factor between 78 and 84?

**6**

4) How many factors does 180 have?

**18**

5) Factor 2100 into primes of the appropriate power.

**$2^2 * 3 * 5^2 * 7$**

6) If a number is divisible by 12, it must also be divisible by what other integers, other than 1 and itself?

**2, 3, 4, 6**

7) Factor 456 into primes of the appropriate power.

**$2^3 * 3 * 19$**

## 1.2 Evaluating Expressions - Questions

- 9/23/2020 + 1) How many integers are between 2012 and 3000, exclusive (not including 2012 or 3000)?

$$\begin{array}{c} 1 \uparrow 3 \\ 2 \\ 1\# = 3 - 1 + 1 = 1 \end{array}$$

$$\begin{array}{c} 1 \uparrow 10 \\ (8\#) \\ = 10 - 1 + 1 \end{array}$$

$$3000 - 2012 - 19 = \boxed{987} \checkmark$$

- + 2) Simplify:

$$7 - 2(-5) + 4(3 + -2) = 7 - 2(-5) + 4(1) = 7 + 10 + 4 = \boxed{21} \checkmark$$

*Know order of operations*

- 3) Simplify:

$$\frac{-9 + 5}{3 - 4 - -5}$$

- 4) Mary paid \$200 to have a booth at the fair. She spent \$46 on supplies and paid an assistant \$50. She took in \$550. What was her profit?

- 5) At the fair, Youa bought two drawings at \$20 each, coffee for \$2, lunch for \$12, and a vase for \$15. How much did she spend?

- 6)  $4! = ?$

*↑ factorial*

- 7) Write 5040 as one factorial.

- 8) Solve for r if:

$$\frac{8!}{r!(8-r)!} = 56$$

## 1.2 Evaluating Expressions - Answers

9/23/2020 + 1) How many integers are between 2012 and 3000, exclusive (not including 2012 or 3000)?

**987**

+ 2) Simplify:

$$7 - 2(-5) + 4(3 + -2)$$

**21**

3) Simplify:

$$\frac{-9 + 5}{3 - 4 - -5}$$

**-1**

4) Mary paid \$200 to have a booth at the fair. She spent \$46 on supplies and paid an assistant \$50. She took in \$550. What was her profit?

**\$254**

5) At the fair, Youa bought two drawings at \$20 each, coffee for \$2, lunch for \$12, and a vase for \$15. How much did she spend?

**\$69**

6)  $4! = ?$

**24**

7) Write 5040 as one factorial.

**7!**

8) Solve for r if:

$$\frac{8!}{r!(8-r)!} = 56$$

**3 or 5**

# 1.3 Manipulating Fractions and Decimals - Questions

9/23/2020

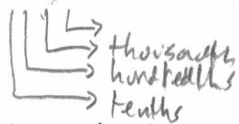
+ 1) Write as a decimal:

$$\frac{2}{5} + \frac{3}{4} \div 10 = ? = \frac{2}{5} + \frac{3}{4} \cdot \frac{1}{10} = \frac{8}{20} + \frac{3}{40} = \frac{16}{40} + \frac{3}{40} = \frac{16+3}{40} = \frac{19}{40}$$

$$\hookrightarrow 0.4 + 0.75 \times 0.1 = 0.4 + 0.075 = \boxed{0.475}$$

$$\begin{array}{r} 40 \overline{) 19.000} \\ \underline{160} \phantom{00} \\ 300 \phantom{0} \\ \underline{280} \phantom{0} \\ 200 \phantom{0} \\ \underline{200} \\ 0 \end{array}$$

+ 2) Write 427.6789 to the nearest hundredth.



$$\boxed{427.68}$$

3) When divided, 1/23 has a repetend (the repeating part of the decimal) of 22 digits. What are the last two digits of the repetend?

4) On a fishing trip the husband caught 52 walleye, 20 northern, and 23 sauger. The wife caught 70 walleye, 15 northern, and 5 sauger. What fraction of the fish were sauger caught by the husband?

5) What fraction of a circle does the hour hand of a clock move through in one minute?

6) On a fishing trip to Canada, a couple caught 163 fish. They caught 110 walleye, 5 northern pike, 6 rock bass, and the rest were perch. They brought home 10 perch. What fraction of the perch caught were brought home (in a reduced fraction)?

7) Simplify:

$$\frac{4 - -12 - 3}{-5 - 6 + -2}$$

## 1.3 Manipulating Fractions and Decimals - Answers

- 9/23/2020  
1) Write as a decimal:

$$\frac{2}{5} + \frac{3}{4} \div 10 = ?$$

**0.475**

- 2) Write 427.6789 to the nearest hundredth.

**427.68**

- 3) When divided,  $1/23$  has a repetend (the repeating part of the decimal) of 22 digits. What are the last two digits of the repetend?

**13**

- 4) On a fishing trip the husband caught 52 walleye, 20 northern, and 23 sauger. The wife caught 70 walleye, 15 northern, and 5 sauger. What fraction of the fish were sauger caught by the husband?

**23/185**

- 5) What fraction of a circle does the hour hand of a clock move through in one minute?

**1/720**

- 6) On a fishing trip to Canada, a couple caught 163 fish. They caught 110 walleye, 5 northern pike, 6 rock bass, and the rest were perch. They brought home 10 perch. What fraction of the perch caught were brought home (in a reduced fraction)?

**10/42 = 5/21**

- 7) Simplify:

$$\frac{4 - -12 - 3}{-5 - 6 + -2}$$

**-1**