SPSG Summer Math Reinforcement Packet Created for Students Entering SPSG 7th Grade in the Fall 2023

Dear Students and Parents: The purpose of a summer math packet is to review math concepts that are often forgotten during the long break from school. Most of the concepts in this packet were covered in 6th grade. **PLEASE DO NOT COMPLETE THE WHOLE PACKET IN ONE OR TWO WEEKS.** Pace yourself throughout the summer and complete the work a little bit at a time, throughout the whole summer.

• Your completed packet will be checked for effort and completion during the first week of school.

• Please show all your work (when possible) to earn full effort credit.

• PLEASE DO NOT USE A CALCULATOR TO COMPLETE ANY OF THE WORK.

• A parent's signature will be required to earn a full effort/completion grade.

• Please pace yourself...completing 10 -15 problems per week is a perfect pace.

An additional review tool is to use the IXL online math program and focus on skills for the upcoming grade level. 30-minute practice sessions each week are very beneficial.

Have a wonderful summer!

The SPSG Math Department

Student's First Name:_____ Last Name:_____

The work in this packet was completed independently (without a calculator) by my daughter.

Parent Signature_____ Date _____

Multiplying Whole Numbers

1. Write the problem vertically

2. Multiply the ones digit of the bottom number by each of the digits in the top number, right to left

3. Bring down a zero and then multiply the tens digit of the bottom number by each digit in the top number, right to left

4. Bring down two zeros and repeat with the hundreds digit of the bottom number

5. Add up all of the products

ex: 3,481 x 142

$$
\begin{array}{r}
\overset{\overset{3}{1}}{}\,^{1}3,481 \\
\times142 \\
\hline
6962 \\
+\ 139240 \\
348100 \\
\hline
\boxed{494,302}
\end{array}
$$

Dividing Whole Numbers

1. Write out the long division problem with the first number (dividend) underneath the division symbol and the second number (divisor) to the left of the division symbol

2. Divide the divisor into the smallest part of the dividend it can go into and write the number of times it can go in on top of the division symbol

3. Multiply the number on top by the divisor and write the product under the number you divided into in step 2

4. Subtract your product from the number above it

5. Bring down the next digit of the dividend

6. Repeat steps 2-5 until there is nothing left to bring down.

7. If your last subtraction answer is not zero, write the remainder on top

ex: 6,425 ÷ 21

$$
\begin{array}{r}
\boxed{305\ R\,20} \\
21\overline{)6425} \\
-63 \\
\hline
12 \\
-0 \\
\hline
125 \\
-105 \\
\hline
20
\end{array}
$$

Find each product. Show your work.

1. 238 x 5	2. 832 x 156	3. 4,899 x 67	4. 756 x 300
5. 19 x 863	6. 188 x 732	7. 3,249 x 173	8. 609 x 840

Find each quotient. Show your work.

9. 876 ÷ 2	10. 9,473 ÷ 5	11. 396 ÷ 24	12. 8,911 ÷ 45
13. 700 ÷ 12	14. 1,065 ÷ 15	15. 2,737 ÷ 305	16. 4,516 ÷ 22

Solve each problem, showing all work.

17. Mrs. Kleim bought 5 boxes of 15 pencils to give to her students. If she has 26 students in her class, how many pencils can she give each student? How many pencils will she have left over?	18. Sarah and her 3 friends split a bag of candy evenly. They each ate 13 pieces of candy and there were 2 pieces leftover. How many pieces of candy were originally in the bag?

Rounding with Whole Numbers & Decimals

ten-thousands	thousands	hundreds	tens	ones	tenths	hundredths	thousandths
—	—	—	—	—	—	—	—

1. Keep all digits to the left of the place you are rounding the same

2. If the digit to the right of the rounding digit is less than 5, keep the rounding digit the same. If it's 5 or greater, increase the rounding digit by 1.

3. Change all places to the right of the digit you are rounding to 0. (Trailing zeros after the decimal are unnecessary)

ex: round 52.943 to the nearest tenth

$52.9\underline{4}3$

less than 5, so the 9 stays the same

52.900

don't need trailing zeros after the decimal

52.9

Word Form & Expanded Form

1. Word Form: write the whole number in word form, translate the decimal to "and", & write the decimal as if it were a whole number, followed by the name of the place of the last digit

2. Expanded Form: write the value of each non-zero digit separately, with addition signs between them

ex: 209.315

two hundred nine and three hundred fifteen thousandths

$200 + 9 + 0.3 + 0.01 + 0.005$

Comparing & Ordering Decimals

1. Compare the whole number portions of the numbers. If they are different write > for greater than or < for less than.

2. If the whole numbers are the same, compare each digit to the right of the decimal point, one at a time until you find digits that are different. (If necessary, add zeros at the end of a decimal.)

ex: 13.702 ◯ 13.74

13 = 13

13.7 = 13.7

13.70 < 13.74

So, $13.702 < 13.74$

Round the number 21,498.2536 to the nearest indicated place.

19. tenth	20. hundred	21. thousandth	22. one
23. thousand	24. hundredth	25. ten	26. ten-thousand

Complete the chart below.

Standard Form	Expanded Form	Word Form
3.962	27.	28.
29.	100 + 2 + 0.09	30.
31.	32.	Five thousand six hundred eighty-five and twelve hundredths
8,770.006	33.	34.
35.	900 + 10 + 4 + 0.3 + 0.02 + 0.008	36.
37.	38.	Two thousand nine and thirty-five thousandths

Compare each pair of numbers by writing <, >, or = in the provided circle.

39. 0.046 ◯ 0.13	40. 9.52 ◯ 90.13	41. 24.13 ◯ 24.130	42. 15.96 ◯ 15.906
43. 0.964 ◯ 1	44. 6.83 ◯ 6.825	45. 7.256 ◯ 7.24	46. 32.9 ◯ 3.290

Order the numbers from least to greatest.

47. 6.86, 6.8, 7, 6.9, 6.827	48. 12.03, 1.2, 12.3, 1.203, 12.301

Adding & Subtracting Decimals

1. Write the problem vertically, lining up the decimal points

2. Add zeros, if necessary

3. Add or subtract the numbers as if they were whole numbers

4. Bring the decimal point straight down

ex: $12.8 - 1.52$

$$\begin{array}{r} 12.\overset{7}{\cancel{8}}{}^{1}0 \\ -\ 1.52 \\ \hline \boxed{11.28} \end{array}$$

Multiplying Decimals

1. Write the problem vertically with the numbers lined up to the right (decimals do NOT need to be lined up)

2. Ignore the decimal points and multiply the numbers as if they were whole numbers

3. Count the total number of decimal places in the two factors and put a decimal point in the product so that it has that same number of decimal places

ex: 3.24×0.8

$$\begin{array}{r} \overset{1}{}\ \overset{3}{}\ \\ 3.24 \quad \longrightarrow \text{2 decimal places} \\ \times \quad 0.8 \quad \longrightarrow \overset{+}{}\ \text{1 decimal place} \\ \hline \qquad\qquad \text{3 decimal places} \\ 2592 \\ \downarrow \\ \boxed{2.592} \end{array}$$

Dividing Decimals

1. Write the dividend under the division symbol and the divisor in front of the division symbol

2. Move the decimal in the divisor after the number and then move the decimal in the dividend the same number of places and bring it up

3. Ignore the decimal point and divide as if whole numbers

4. If there is a remainder, add a zero to the end of the dividend, bring it down, and then continue dividing until there is no remainder

ex: $32.3 \div 0.5$

$$\begin{array}{r} \boxed{64.6} \\ 0.5\overline{)\,32.3\,0} \\ \underline{-30} \\ 23 \\ \underline{-20} \\ 30 \\ \underline{-30} \\ 0 \end{array}$$

Find each sum or difference. Show your work.

49. 8.74 + 10.36	50. 37.4 − 8.55	51. 12.9 + 105.67	52. 450.89 − 213.33
53. 24.1 + 3.74	54. 14.76 − 9.8	55. 622.85 + 53.49	56. 67 − 14.06

Find each product or quotient. Show your work.

57. 4.5 x 6	58. 144.8 ÷ 4	59. 2.7 x 0.8	60. 6.2 ÷ 0.04
61. 8.9 x 2.5	62. 15.8 ÷ 0.5	63. 14.8 x 0.12	64. 16.2 ÷ 1.2

Solve each problem, showing all work.

65. Ryan spent $3.25 on lunch every day, Monday through Friday. If he had $20 at the start of the week, how much money did he have left after Friday?	66. Three friends went out to lunch. The bill came to $47.31. If they split the bill evenly, how much money does each friend owe?

Adding & Subtracting Fractions

1. Rename the fractions to equivalent fractions with common denominators

2. Add or subtract the numerators and keep the denominator the same

3. If mixed numbers, add or subtract the whole numbers

4. If possible, simplify the answer & change improper fractions to mixed numbers

ex: $4\frac{4}{9} + \frac{2}{3}$

$$4\frac{4}{9} \quad \overset{\times 1}{\underset{\times 1}{=}} \quad \frac{4}{9}$$

$$+ \quad \frac{2}{3} \quad \overset{\times 3}{\underset{\times 3}{=}} \quad \frac{6}{9}$$

$$4 \qquad \frac{10}{9} = \boxed{5\frac{1}{9}}$$

Multiplying Fractions

1. Turn a whole number into a fraction by giving it a denominator of 1

2. Cross-simplify the fractions if possible

3. Multiply the 2 numerators and the 2 denominators

4. If possible, simplify the answer & change improper fractions to mixed numbers

ex: $6 \times \frac{2}{3}$

$$\frac{\overset{2}{6}}{1} \times \frac{2}{3} = \frac{4}{1}$$

$$= \boxed{4}$$

Dividing Fractions

1. Turn a whole number into a fraction by giving it a denominator of 1

2. Keep the 1st fraction the same, change the division symbol to multiplication, and flip the 2nd fraction to its reciprocal

3. Multiply the 2 fractions

4. If possible, simplify the answer & change improper fractions to mixed numbers

ex: $12 \div \frac{1}{2}$

$$\frac{12}{1} \div \frac{1}{2}$$

$$\frac{12}{1} \times \frac{2}{1} = \frac{24}{1} = \boxed{24}$$

Find each sum or difference. Show your work.

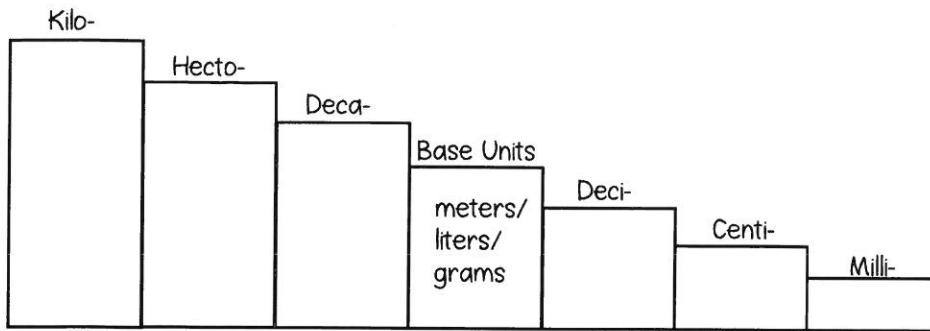|			
67. $\frac{7}{8} + \frac{5}{6}$	68. $\frac{9}{10} - \frac{1}{2}$	69. $\frac{3}{11} + \frac{2}{3}$	70. $\frac{11}{12} - \frac{13}{18}$
71. $4\frac{5}{9} + 7\frac{1}{3}$	72. $12\frac{9}{14} - 9\frac{3}{7}$	73. $3\frac{3}{5} + 2\frac{3}{4}$	74. $2\frac{2}{15} - 1\frac{2}{3}$

Find each product or quotient. Show your work.

75. $\frac{1}{6} \times \frac{3}{4}$	76. $6 \div \frac{1}{3}$	77. $15 \times \frac{2}{3}$	78. $\frac{1}{2} \div 3$
79. $\frac{1}{6} \times 10$	80. $\frac{1}{4} \div 2$	81. $\frac{5}{9} \times \frac{3}{20}$	82. $4 \div \frac{1}{5}$

Solve each problem, showing all work.

83. Jacqui ran $1\frac{1}{2}$ miles on Monday, Wednesday, and Friday and $3/4$ mile on Tuesday and Thursday. How far did she run in all?	84. Tyrell gave 3 packs of baseball cards to his friends. He gave each friend $1/3$ of a pack. How many friends got baseball cards?

The Metric System

Kilo-

Hecto-

Deca-

Base Units

meters/
liters/
grams

Deci-

Centi-

Milli-

Determine the direction and count the number of steps it takes to get from the starting unit to the unit you are converting to and move the decimal point the same number of places in that direction.

ex: 23 m = _____ cm

going from base unit step to centi- step, so need to move the decimal 2 places right

23.00

= 2,300 cm

The Customary System

Length	Weight	Capacity
1 ft = 12 in 1 yd = 3 ft 1 mi = 5,280 ft	1 lb = 16 oz 1 T = 2,000 lb	1 c = 8 fl oz 1 pt = 2 c 1 qt = 2 pt 1 gal = 4 qt

To convert from a larger unit to a smaller unit, multiply. To convert from a smaller unit to a larger unit, divide.

ex: 18 c = _____ pt

cups are smaller units of measure than pints, so need to divide
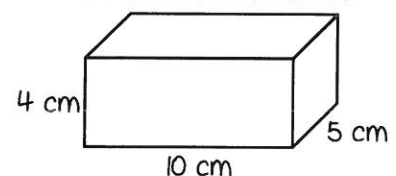
$18 \div 2 =$ 9 pints

Volume

Volume is the number of cubic units inside a figure.

Volume of Rectangular Prism = length x width x height

Volume of Irregular Figure: count cubic units

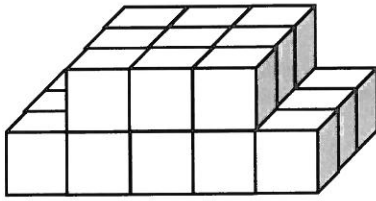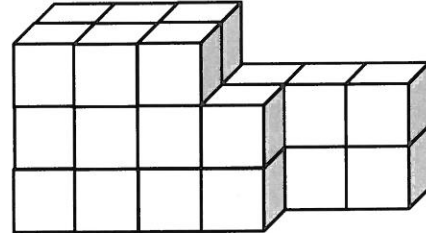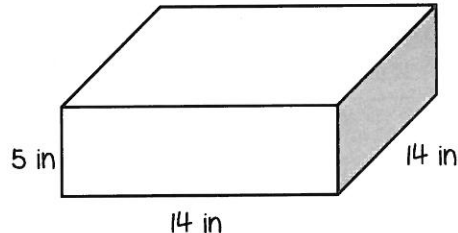ex: find the volume

4 cm

5 cm

10 cm

$V = 4 \times 10 \times 5 =$ 200 cm³
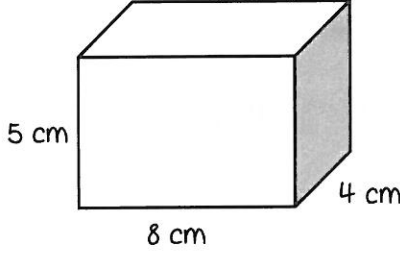
Convert each Metric measurement. Show your work.

85. 1.9 km = _____ m	86. 23 g = _____ mg	87. 350 mℓ = _____ kℓ
88. 0.07 kg = _____ cg	89. 6 cm = _____ m	90. 35 mℓ = _____ ℓ

Convert each Customary measurement. Show your work.

91. 48 in = _____ ft	92. 6 pt = _____ c	93. 3 T = _____ lb
94. 1.5 mi = _____ ft	95. 32 pt = _____ gal	96. 32 oz = _____ lb

Find the volume of each figure. Show your work.

97.	98.
99.	100.

97.

98.

99.

5 in
14 in
14 in

100.

5 cm
8 cm
4 cm

Name: _____

SECRET WORD PUZZLE: Long Division

___ ___ ___ ___ ___ ___ ___
1   2   3   4   5   6   7

PROBLEMS

1 3960 ÷ 45
2 276 ÷ 12
3 7524 ÷ 76
4 968 ÷ 11
5 2001 ÷ 23
6 1095 ÷ 15
7 2345 ÷ 35

KEY

A 12	**H** 78	**O** 26	**V** 16
B 98	**I** 73	**P** 88	**W** 7
C 34	**J** 13	**Q** 47	**X** 91
D 9	**K** 87	**R** 11	**Y** 20
E 52	**L** 4	**S** 50	**Z** 18
F 46	**M** 99	**T** 77	
G 61	**N** 67	**U** 23	

Relate Fractions, Decimals, and Percents #1

Complete each row of the table by filling in the missing numbers. Write all fractions in simplest form.

Fraction	Decimal	Percent
$\frac{11}{100}$	0.11	11%
$\frac{37}{100}$		
		50%
	0.1	
$\frac{9}{100}$		
	0.82	
$\frac{11}{25}$		
		36%
$\frac{1}{20}$		
		98%
	0.02	
		8%

Following this page, is a set of optional enrichment/challenge activities for incoming 7th grade students.

Have fun!

Logic Problem

Use the table to help you solve the logic problem. Each square represents a possible answer. Follow the rows and columns to find the correct combination. Draw a dot in a square for the answer where the vertical and horizontal squares meet. Draw an "x" in a square that isn't the answer.

	Game	Doll	Kite	Basketball	Blue	Green	Red	Orange
Hannah								
Jack								
Cassie								
Paul								
Blue				
Green				
Red				
Orange				

> **Hannah, Jack, Cassie and Paul attend a birthday party. They each bring a gift: a kite, doll, game, and basketball. After the party, each child goes home with a different color balloon: red, blue, green, and orange. Using the clues given, figure out which child brought what gift, and what color balloon they went home with.**

1. **Hannah did not bring the doll as a gift but she did go home with a blue balloon.**

2. **Jack brought the basketball for a gift but did not go home with a red or green balloon.**

3. **The child who brought the kite for a gift went home with a red balloon.**

4. **Cassie brought the doll as a gift.**

Education.com

Dividing Fractions: Word Problems

Answer each question.

1 Tess wants to make throw pillows for her couch. She has 6 yards of fabric. Each pillow uses $\frac{2}{3}$ of a yard of fabric. How many pillows can she make?

2 Zander is making individual desserts for a dinner party. He has $\frac{3}{4}$ of a cup of whipped cream, and he wants to put $\frac{1}{8}$ of a cup of whipped cream on each dessert. How many desserts can he make?

3 Daniel is using apple juice to make juice pops. He has 3 cups of juice, and each juice pop uses $\frac{1}{2}$ of a cup of juice. How many juice pops can he make?

4 Katie feeds her cat, Elmer, $\frac{2}{3}$ of a cup of food each day. She buys a bag of cat food that contains 18 cups of dry food. How many days will that bag of cat food last?

5 Lucas is making a wire sculpture for art class. For the sculpture, he needs to cut a wire into pieces that are each $\frac{1}{16}$ of a foot long. If the original wire is $\frac{3}{4}$ of a foot long, how many pieces will Lucas have?

6 Nina works at Sweet Smoothies. She uses $\frac{3}{4}$ of a cup of crushed ice in each smoothie. When Nina starts her shift, there are 24 cups of crushed ice in the ice maker. How many smoothies can she make with that ice?

7 Dylan bought a $\frac{1}{2}$ –pound bag of sunflower seeds. If one serving of sunflower seeds is $\frac{1}{16}$ of a pound, how many servings are in the bag?

median

The median is the middle value.

- Put all of the values into order.
- The median is the middle value.
- If there are two values in the middle, find the mean of these two.

2, 2, 3, **5**, 5, 7, 8

The median is 5

range

The range is the difference between the lowest and highest value.

- Find the highest and lowest values.
- Subtract the lowest value from the highest.

2, 2, 3, 5, 5, 7, **8**

Lowest   Highest

$8 - 2 = 6$

The range is 6

mean

The mean is the average or norm.

- Add up all of the values to find a total.
- Divide the total by the number of values you added together.
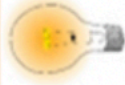
$2 + 2 + 3 + 5 + 5 + 7 + 8 = \boxed{32}$

There are 7 values

Divide the total by 7

$32 \div 7 = 4.57$

The mean is 4.57

mode

The mode is the most frequent value.

- Count how many of each value appears.
- The mode is the value that appears the most.
- You can have more than one mode.

2, 2, 3, **5, 5**, 7, 8
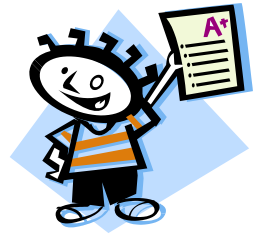
2   5

modes are 2 and 5

Name: _____ Date: _____ Period: _____

Mario's Dilemma

Below is a list of Mario's most recent test scores.

| 81% | 95% | 88% | 85% | 81% |

Mean:
Median:
Mode:
Range:

1. Calculate the mean, median, mode, and range of Mario's test scores.

2. Mario wants to convince his parents that he is a math superstar. Which measure should Mario use?

_____

_____

_____

_____

3. Oh, no! Mario scored a 38% on his 6th test. How do you **THINK** the data will change? Without recalculating each value, explain what would happen to each of the above measures (become higher, lower, stay the same).

Mean: _____

Median: _____

Mode: _____

Range: _____

4. Find the mean, median, mode, and range, including the 6th test score.

Mean:
Median:
Mode:
Range:

5. How does the data change? Describe the change(s) for each measure. Be specific!

Mean: _____

_____

Median: _____

_____

Mode: _____

_____

Range: _____

_____

| Part 2 |

Below is a list of Mario's first quarter test scores.

6. Calculate the mean, median, mode, and range of the data.

70%   89%   75%   36%   80%

Mean:
Median:
Mode:
Range:

7. What is Mario's current percent and letter grade in the class? _____

8. If Mario would have studied for the test and scored a 91% instead of a 36% on one of his tests, calculate the mean, median, mode, and range of the new scores.

Mean:
Median:
Mode:
Range:

9. What is Mario's new percent and letter grade in the class? _____

A+	98 - 100%	A+	98 - 100%	A+	98 - 100%
A	93 - 97%	A	93 - 97%	A	93 - 97%
A-	90 - 92%	A-	90 - 92%	A-	90 - 92%
B+	88 - 89%	B+	88 - 89%	B+	88 - 89%
B	83 - 87%	B	83 - 87%	B	83 - 87%
B-	80 - 82%	B-	80 - 82%	B-	80 - 82%
C+	78 - 79%	C+	78 - 79%	C+	78 - 79%
C	73 - 77%	C	73 - 77%	C	73 - 77%
C-	70 - 72%	C-	70 - 72%	C-	70 - 72%
D+	68 - 69%	D+	68 - 69%	D+	68 - 69%
D	63 - 67%	D	63 - 67%	D	63 - 67%
D -	60 - 62%	D -	60 - 62%	D -	60 - 62%
F	0 - 59%	F	0 - 59%	F	0 - 59%

Name _____   Date _____

GCF and LCM:
CRACK THE CODE

Find the greatest common factor (GCF) or the least common multiple (LCM) of the given sets of numbers. Then, look for any places where that GCF or LCM appears in the code at the bottom of the page, and write the corresponding letter on the line. Use the code to reveal the rest of the joke! **Note:** Not every letter will be used in the code at the bottom.

GCF

B 60   75   GCF: _____

R 28   70   GCF: _____

K 16   50   98   GCF: _____

F 36   92   GCF: _____

O 48   84   GCF: _____

H 32   40   88   GCF: _____

LCM

T 12   15   LCM: _____

N 6   14   LCM: _____

I 6   9   12   LCM: _____

A 10   18   LCM: _____

E 11   4   LCM: _____

W 5   9   15   LCM: _____

P 10   5   3   LCM: _____

S 10   20   25   LCM: _____

Where do polar bears store their money?

___ ___   ___ ___ ___   ___ ___ ___ ___   ___ ___ ___ ___
36   42   60   8   44   100 42   12   45   15   90   42   2

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Name _____   Date _____
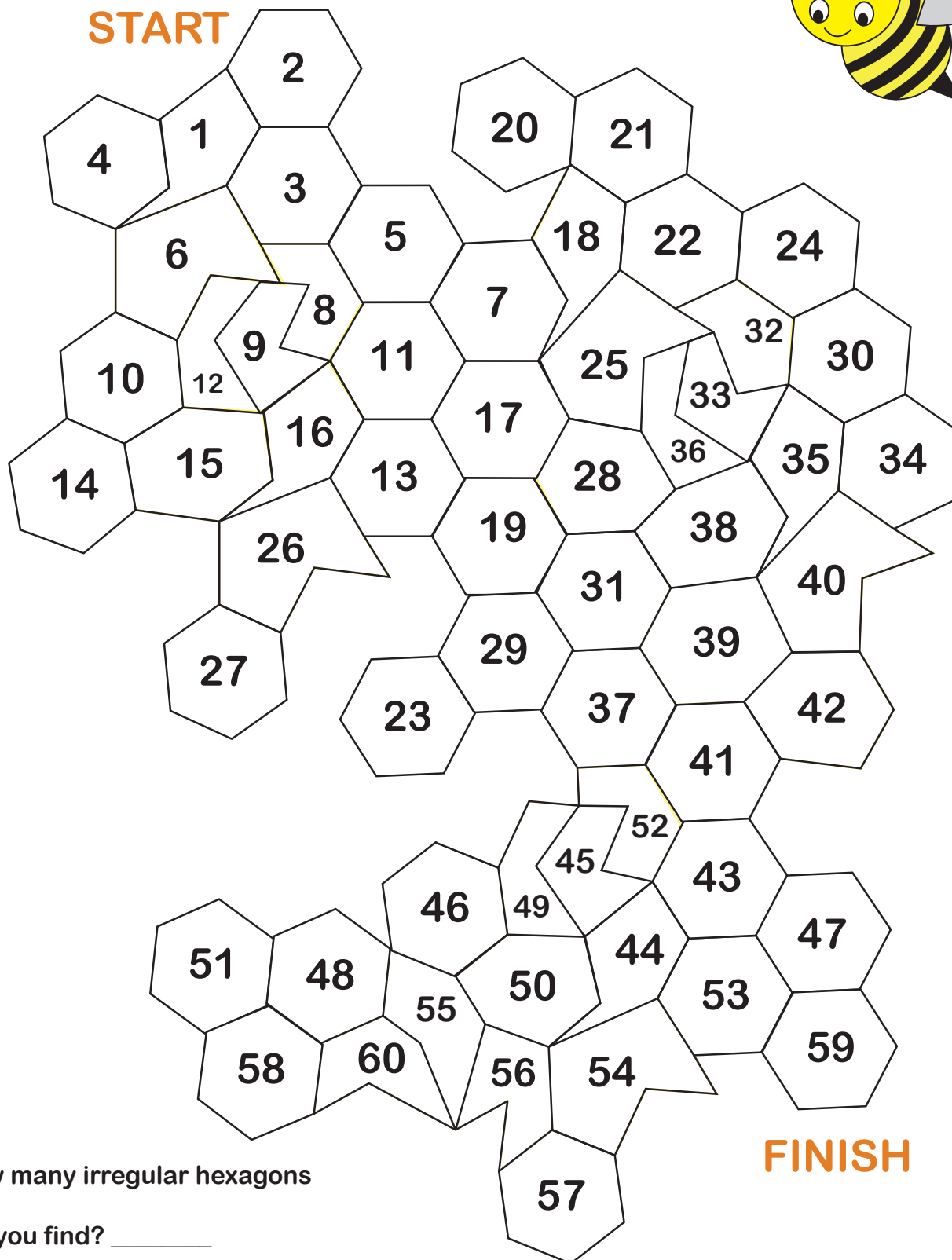
It's a Maze of Hexagons!

Color the hexagons containing prime numbers blue to find your way out of the maze.

Color the irregular hexagons yellow.

START

2
1
4
3
6
5
18
20
21
22
24
8
7
9
11
25
32
33
30
10
12
16
17
28
36
35
34
14
15
13
19
38
26
31
40
29
39
27
23
37
42
41
52
45
43
46
49
47
44
51
48
50
53
59
55
58
60
56
54
57

FINISH

How many irregular hexagons

did you find? _____