For Students Entering Math 6

As a way to assist you into transitioning to the "Middle School" atmosphere of West Briar, this summer math packet was developed to provide students entering sixth grade an opportunity to review grade level math objectives and to improve math performance. We hope this helps to build anticipation for new learning and gives you confidence in your abilities so that you are well prepared for the next level of math. This packet will help ease the transition and help you reinforce skills that are needed prior to the start of sixth grade to ensure future success.

*SOLVE THESE PROBLEMS WITHOUT A CALCULATOR AND SHOW ALL WORK IN PENCIL***

We strongly encourage that you include this packet in your summer festivities! Good luck and enjoy!

From the 6th grade Math Team:

W. Francis, S. Singh, J. Wilson

Multiplying with Decimals

Find 4.3×2.7.

Multiply as you would with whole numbers.	*Count the number of decimal places in both factors. The total is the number of decimal places in the product.*
2 4.3 × 2.7 301 860 1161	4.3 ← 1 decimal place × 2.7 ← + 1 decimal place 11.61 ← 2 decimal places

Find each product.

1. 14 × 8.8 = 1120

2. 1.6 × 9 = _____

3. 0.4 × 3.2 = _____

4. 0.05 × 0.3 = _____

5. 2.15 × 8.3 = _____

6. 3.3 × 0.12 = _____

7. 0.51 × 4.2 = _____

8. 1.35 × 13 = _____

9. $23 \times 0.47 =$ _____

10. $0.9 \times 5 =$ _____

11. $168 \times 2.25 =$ _____

12. $0.8 \times 0.11 =$ _____

13. $20 \times 20.2 =$ _____

14. $4.9 \times 0.3 =$ _____

15. A roll of paper towels contained 250 sheets. Each sheet was 8.75 inches long. How long was the roll? _____

Dividing with Decimals

Find 36.8 ÷ 16.

Place the decimal point. 2. 16)36.8 Think: 20)40 Try 2 in the quotient.	2.3 16)36.8 −32 Multiply 2 × 16. 48 Subtract. Bring down 8. −48 Multiply 3 × 16. 0 Subtract.

Find each quotient.

1. 6)13.8

2.
−12
__
__
−__
__
__

2. 6)131.4

3. 9)141.3

4. 5)388.5

5. 7)669.2

6. 28)263.2

7. 41)274.7

8. 7)34.23

9. 269.12 ÷ 8 = _____

10. 311.56 ÷ 4 = _____

11. 2,229.62 ÷ 46 = _____

12. 1,449.09 ÷ 81 = _____

13. A photographer bought 36 rolls of film for $136.44. What was the price of one roll? _____

14. Four students each ran 100 m in a 400-m relay race. The team's total time was 49.44 sec. Find the average time of each runner. _____

Multiplying Mixed Numbers

How to find the product of two mixed numbers:

Find $3\frac{2}{3} \times 4\frac{1}{2}$.

Step 1

Estimate by rounding.

$$3\tfrac{2}{3} \times 4\tfrac{1}{2}$$
$$\downarrow \quad \downarrow$$
$$4 \times 5 = 20$$

Then write each mixed number as an improper fraction.

$$3\tfrac{2}{3} \times 4\tfrac{1}{2}$$
$$\downarrow \quad \downarrow$$
$$\tfrac{11}{3} \times \tfrac{9}{2}$$

Step 2

Look for common factors and simplify.

$$\frac{11}{\cancel{3}_{1}} \times \frac{\overset{3}{\cancel{9}}}{2} = \frac{11}{1} \times \frac{3}{2}$$

Step 3

Multiply. Write the product as a mixed number.

$$\frac{11}{1} \times \frac{3}{2} = \frac{33}{2} = 16\frac{1}{2}$$

$16\frac{1}{2}$ is close to 20, so the answer is reasonable.

Find each product. Simplify if possible.

1. $2\frac{3}{4} \times 3\frac{1}{2} =$ _____
2. $2\frac{1}{5} \times 2\frac{2}{3} =$ _____
3. $6 \times 3\frac{1}{4} =$ _____
4. $1\frac{2}{5} \times 3\frac{1}{4} =$ _____
5. $4\frac{1}{2} \times 16 =$ _____
6. $1\frac{3}{8} \times 2\frac{1}{2} =$ _____
7. **Number Sense** Is $2 \times 17\frac{5}{6}$ greater than or less than 36? Explain.

_____

_____

_____

Customary Measurement

R 10-1

Units of Length

foot (ft)	1 ft = 12 in.
yard (yd)	1 yd = 3 ft
	1 yd = 36 in.
mile (mi)	1 mi = 5,280 ft
	1 mi = 1,760 yd

Units of Capacity

cup (c)	1 c = 8 fluid ounces (oz)
pint (pt)	1 pt = 2 c
quart (qt)	1 qt = 2 pt
gallon (gal)	1 gal = 4 qt

How to change from one unit of measurement to another:

To change from larger units to smaller units in the customary system, you have to multiply.

120 yd = _____ ft

1 yd = 3 ft

120 × 3 ft = 360 ft

120 yd = 360 ft

To change from smaller units to larger ones, you have to divide.

256 oz = _____ c

1 c = 8 oz

256 ÷ 8 = 32

256 oz = 32 c

Complete.

1. 36 in. = _____ ft
2. 4 qt = _____ c
3. 5 lb = _____ oz
4. 39 ft = _____ yd
5. 1.5 mi = _____ ft
6. 3.5 gal = _____ qt
7. 2 T = _____ lb
8. 16 pt = _____ qt
9. 64 oz = _____ lb
10. 3 yd = _____ in.
11. 4 gal = _____ pt
12. 55 yd = _____ ft
13. 6.5 lb = _____ oz
14. 20 pt = _____ gal
15. 4.5 qt = _____ c
16. 205 yd = _____ ft
17. **Reasoning** A vendor at a festival sells soup for $1.25 per cup or $3.75 per quart. Which is the better buy?

_____

Ratio and Proportion

You can use **ratios** to compare two quantities.

2 balloons to **3** sticks

You can write ratios as:

words 2 to 3

with a colon 2:3

as a fraction $\frac{2}{3}$

A statement that two ratios are equal is called a **proportion.**

$$\frac{\text{1 balloon}}{\text{2 sticks}} = \frac{\text{2 balloons}}{\text{4 sticks}}$$

$$\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$$

$\frac{1}{2} = \frac{2}{4}$ is a proportion.

Write each ratio. Use words, a colon, or a fraction.

1. Write the ratio of squares to circles.

_____

2. The Computer Club has 20 girls and 15 boys. Write the ratio of girls to boys in the club.

_____

Tell if the ratios form a proportion. Write yes or no.

3. $\frac{3}{4}$ $\frac{9}{12}$ _____ **4.** $\frac{1}{3}$ $\frac{2}{9}$ _____ **5.** $\frac{3}{5}$ $\frac{6}{10}$ _____ **6.** $\frac{4}{6}$ $\frac{8}{18}$ _____

Complete each table so that all ratios are equal.

7.

3	6	9	12
5			

8.

2			
7	21	42	63

9.

4		20	
5	10		50

10. The ratio of the width to the length of a painting is 3 to 7. If the painting is 42 in. long, how wide is it?

_____

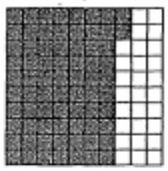
11. The ratio of the number of moons the planet Neptune has to the number that Saturn has is 4 to 9. Saturn has 18 moons. How many moons does Neptune have?

_____

Fractions, Decimals, and Percents

R 7

Fractions, decimals, and percents all name parts of a whole. The grid to the right has 72 out of 100 squares shaded.



72 out of 100 are shaded. As a fraction, that is $\frac{72}{100}$.
As a decimal, that is 0.72. As a percent, that is 72%.

Write 40% as a fraction and decimal.

$40\% = \frac{40}{100} = 0.40$

The decimal point moves two places to the left.

Write 0.3% as a fraction and decimal.

$0.3\% = \frac{0.3}{100} = 0.003$

The decimal point moves two places to the left. Fill in any spaces with zeros.

Write 0.47 as a fraction and percent.

$0.47 = \frac{47}{100} = 47\%$

Write $\frac{3}{4}$ as a decimal and percent.

You can use a proportion:

$\frac{3}{4} = \frac{n}{100}$

$\frac{4n}{4} = \frac{300}{4}$

$n = 75$

So, $\frac{3}{4} = 0.75 = 75\%$.

Write each in two other ways.

1. $\frac{2}{10}$ _____; _____

2. $\frac{23}{100}$ _____; _____

3. $\frac{7}{10}$ _____; _____

4. 97% _____; _____

5. 16% _____; _____

6. 52% _____; _____

7. 0.04 _____; _____

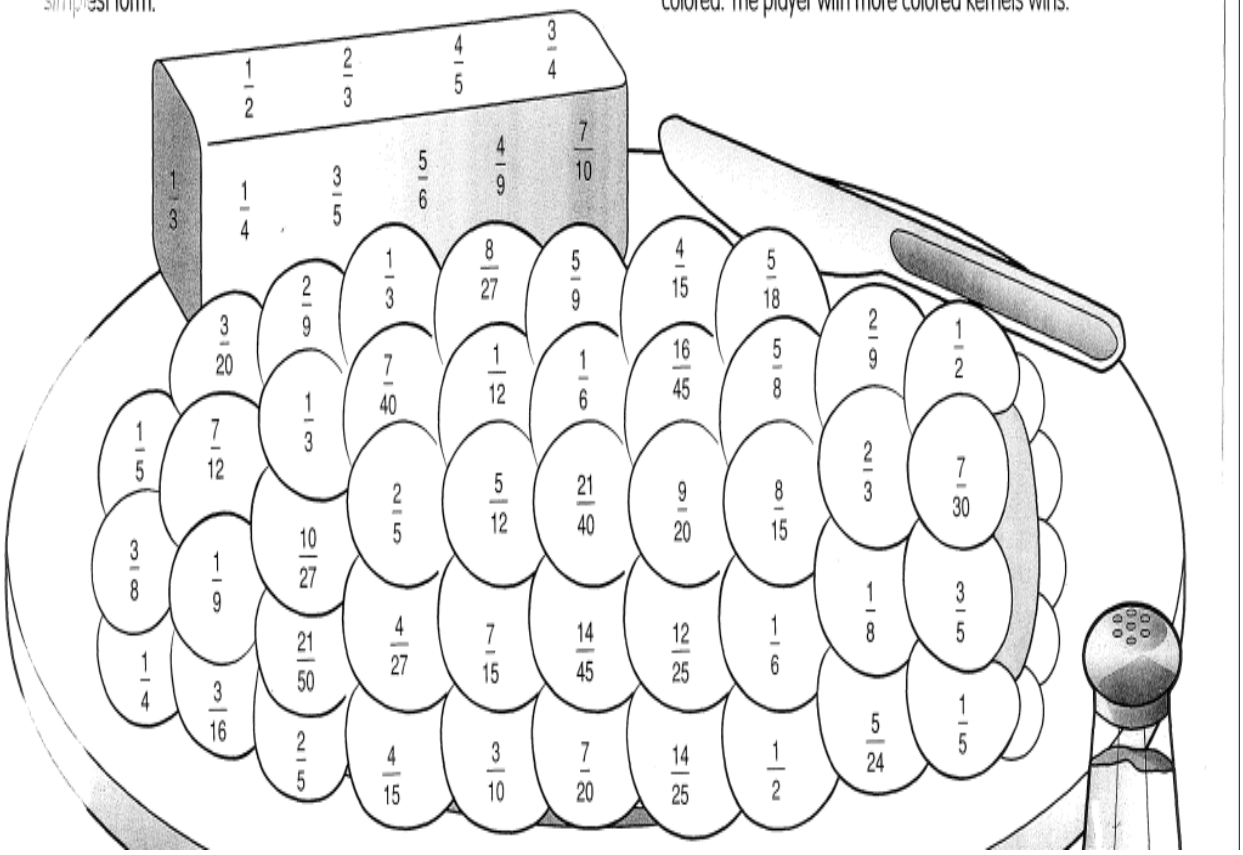
8. 0.35 _____; _____

9. **Number Sense** Sheila got 87% of the problem correct. Patrick got $\frac{91}{100}$ correct. Who scored higher? _____

A Game for Two Players

Directions:

1. Choose a crayon or colored pencil that is a different color than your partner's.
2. In turn, multiply any two fractions from the stick of butter. Show your work on your paper, writing your answer in simplest form.
3. Find your answer on the corn cob and color its kernel. If your answer is not on the corn cob or the kernel has already been colored, your turn is over.
4. Play for a set amount of time or until all kernels have been colored. The player with more colored kernels wins.



Fill in the table with the corresponding fractions, decimals, and percents:

	Fractions	Decimals	Percents
a)	$\frac{1}{2}$	.5	50%
b)	$\frac{4}{25}$		%
c)	$\frac{4}{5}$		%
d)	___	.3	%

	Fractions	Decimals	Percents
j)	___	.42	%
k)	___	.56	%
l)	___		68%
m)	___		85%

7) Change the following mixed numbers to improper fractions:

a) $3\frac{1}{8} =$ ___ b) $5\frac{4}{7} =$ ___ c) $9\frac{1}{11} =$ ___ d) $4\frac{2}{7} =$ ___

Write Numbers in Words and Digits

Exercises: Write the number name.

1. 560.08

2. 7.016

3. 24.47

4. 6,003

5. 3,005,600.07

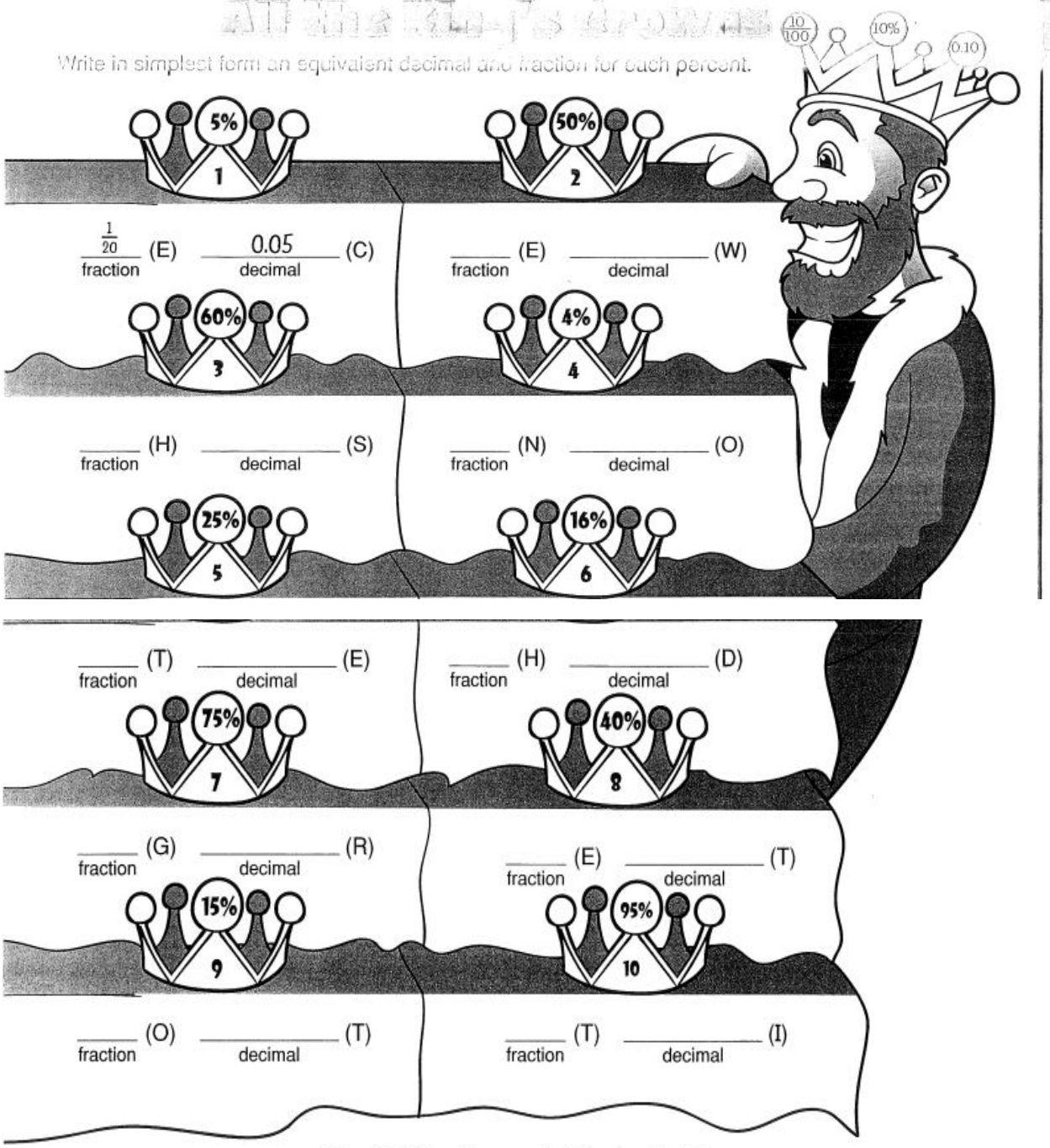
Write the number the name represents:

6. Forty-five thousandths

7. Seventeen and seven hundredths

Name _____ **Fractions, decimals, and percents**

Write in simplest form an equivalent decimal and fraction for each percent.



Why did the king go to the dentist?

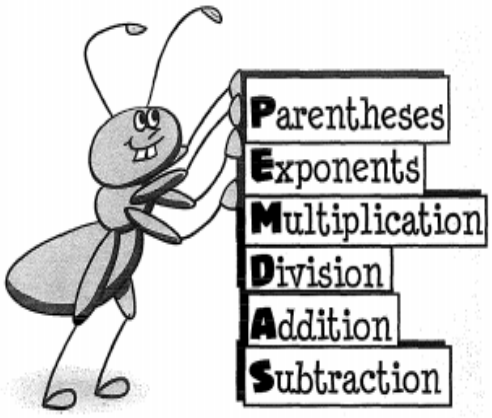
To find out, write each letter from above on its matching numbered line below.

1/4	0.04		3/4	1/20	0.4		4/25	0.95	0.6		0.15	0.25	1/2	19/20	3/5		0.05	0.75	3/20	0.5	1/25	2/5	0.16	!								

First Things First!

Tell which operation to do first.

1. (4 – 1) x 6 subtraction
2. 6 x 8 + 9 _____
3. 63 ÷ 7 – 4 _____
4. 8 + 5 – 7 _____
5. 200 ÷ 10 – 50 _____
6. 16 x (45 + 18) _____
7. 93 + 45 ÷ 2 _____
8. 62 x (80 – 75) _____
9. 123 – 8 x 5 _____
10. 172 x 90 + 81 _____



Solve.

11. (17 + 3) x 8 = _____
12. 144 ÷ (12 – 8) = _____
13. 36 – 7 x 2^2 = _____
14. 54 – 81 ÷ 9 = _____
15. 81 ÷ (7 – 4) = _____

Add parentheses to make each equation true.

16. 15 x 14 ÷ 5 = 42
17. 81 ÷ 9^2 + 7 = 8
18. 9 – 8 x 2^2 – 1 = 3
19. 6 x 11 – 4 = 42
20. 27 – 18 x 12 = 108

1. Find the products. **This page should be completed in 3 minutes no more than 4 minutes. Have someone time you.** Any multiplication problem you do not know quickly, practice on flash cards.

6 x2	4 x4	7 x2	5 x4	12 x0	3 x5	6 x3	3 x8	0 x8	7 x3	5 x5	6 x4	3 x9	8 x3
6 x5	2 x12	3 x6	8 x2	7 x5	12 x1	8 x4	3 x7	11 x4	7 x6	9 x2	4 x8	4 x6	9 x3
4 x7	5 x0	0 x3	5 x8	9 x4	5 x7	2 x1	9 x5	5 x6	11 x5	5 x9	9 x8	7 x7	7 x9
8 x8	6 x6	8 x7	1 x2	9 x6	9 x9	8 x6	1 x9	9 x1	2 x5	1 x1	3 x4	12 x3	1 x3
8 x0	8 x1	12 x4	8 x9	12 x0	5 x1	3 x2	4 x0	2 x2	7 x1	6 x8	2 x6	6 x7	12 x5
8 x5	4 x1	2 x8	9 x7	12 x8	11 x6	2 x9	7 x4	0 x2	6 x9	1 x0	5 x2	3 x3	2 x4
4 X9	12 x6	4 x2	4 x3	1 x4	2 x3	11 x7	6 x1	7 x8	5 x3	2 x7	1 x8	4 x5	11 x4

2. Find the quotients. **This page should be completed in 3 no more than 4 minutes. Practice any problems you do not know instantly.** Think of the multiplication fact family. The better you know your multiplication facts the easier division will be.

2)2	3)9	8)32	7)49	5)10	4)0	1)1	4)8	2)12	9)54	1)3	1)2	2)4
8)8	7)63	8)40	5)0	4)4	4)12	9)45	9)63	6)6	3)12	1)7	3)0	1)9
2)16	3)3	3)15	5)20	3)18	3)6	5)15	7)0	9)27	4)16	7)21	4)20	7)28
8)16	3)21	9)18	4)24	2)6	1)8	5)35	7)35	3)27	6)36	3)24	2)0	4)32
9)9	4)36	6)42	5)40	8)64	7)14	6)30	8)56	1)5	4)28	7)56	8)24	6)24

81 ÷ 9= _____	48 ÷ 6 = _____	18 ÷ 6 = _____	42 ÷ 7 = _____
10 ÷ 2 = _____	54 ÷ 6 =_____	36 ÷ 9 = _____	45 ÷ 5 = _____
72 ÷ 8 = _____	8 ÷ 2 =_____	72 ÷ 9 = _____	6 ÷ 1 =_____

Order Decimals

Exercises: List each group of numbers in order **from least to greatest:**

1.)20, 4, .6, .08

2.)246.8, 248.6, 244.9, 246.5

3.) 1.03, 2.4, .89, .987

4.) 14.8, 2.68, .879, 8.47

5.) 5.3, 5.12, 5.38, 5.29

6.) 54.89, 56.3, 58.1, 52.98

7.) 4, .006, .8, .07

8.) 297, 3.456, 64.4, 7.24

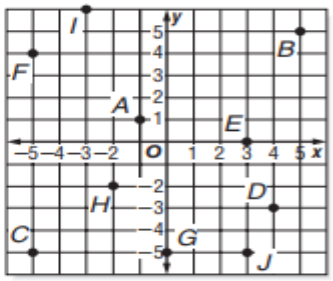
9.) 794, 793.8, 794.65, 794.7

10.) 9, 6.7, 7.24, 14

11.) -6.78, -6.56, -7.45, -0.8

12.) -8.9, -6.56, -3.88, -5.7

Name the ordered pair for each point graphed at the right. Then identify the quadrant in which each point lies.



1. *A*

2. *B*

3. *C*

4. *D*

5. *E*

6. *F*

7. *G*

8. *H*

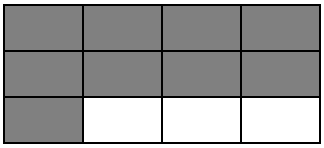
9. *I*

10. *J*

1. Roderick correctly answers 92% of the questions on his math benchmark test. Which fraction represents the part of questions Roderick answered correctly?
   a. $\frac{22}{25}$ b. $\frac{23}{25}$
   c. $\frac{19}{20}$ d. $\frac{18}{20}$

2. Which of the following equations is NOT true?
   a. 7% = 0.7 b. 14% = 0.14
   c. 100% = 1 d. 140% = 1.40

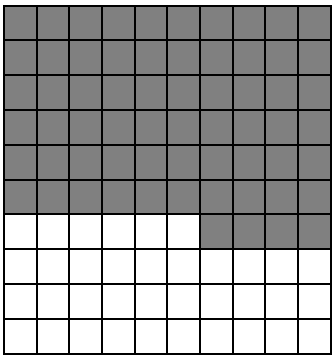
3. James divides a piece of poster board into equal sections and uses the shaded sections for an art project.



What percent of the poster board does James have left for other projects?

   a. 75% b. 25%
   c. 9% d. 3%

4. Lynn shaded the figure below.



How would this amount be represented as a ratio and a percent?

   a. 64 out of 100 6.4%
   b. 16 out of 25, 64%
   c. 64 out of 100, 640%
   d. 19 out of 25, 64%

5. Alan painted 1/5 of a fence. Val painted two times as much of the fence as Alan. What percent of the fence did Val paint?
   a. 20% b. 60%
   c. 40% d. 75%

6. Gayle cut a pizza into 4 equal pieces. She ate 1 piece. What percent of the pizza was left?

7. Ted put together 40% of a puzzle. Jen put together 20% of the same puzzle. What fraction of the puzzle is completed?
   a. $\frac{2}{3}$ b. $\frac{3}{5}$
   c. $\frac{1}{6}$ d. $\frac{5}{6}$

8. Mrs. Mosley asked her students to write a group of equivalent numbers. Below are the responses from four of her students.
   - Kasen: 207%, $2\frac{7}{10}$, 2.07
   - Ella: $\frac{12}{5}$, 2.4, 24%
   - Jack: 2.125, 212.5%, $2\frac{1}{8}$
   - Kaitlyn: 2.02, $\frac{101}{50}$, 202%

Which of the four students completed Mrs. Mosley's task correctly?

   a. Kasen only
   b. Ella and Jack only
   c. Kasen, Ella, and Kaitlyn only
   d. Jack and Kaitlyn only

9. Jen has 4 coins in her purse. The value of the coins is 30% of a dollar. Which could represent the coins in Jen's purse?
   a. 4 nickels
   b. 2 dimes and 2 nickels
   c. 1 quarter, 1 dime, and 2 nickels
   d. 3 dimes and 1 nickel

10. Coach Pender surveys 50 students in his class to determine which new sport they want to add to the athletic schedule next year. The table shows the results of the survey.

New Sports

Sport	Part of Votes
Soccer	28%
Rugby	6 students
Swimming	18%
Tennis	0.24
Baseball	$\frac{9}{50}$

What percent of students voted for rugby?

Which sports received an equivalent amount of votes?

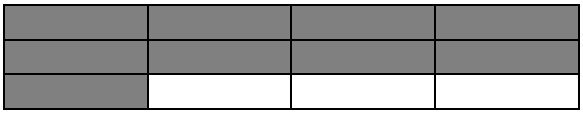
What fraction of students want tennis as the new sport?

What decimal represents the part of students who voted for soccer?

11. Melixa correctly answers 92% of the questions on his math benchmark test. Which fraction represents the part of questions she answered correctly?

   a. $\frac{22}{25}$ b. $\frac{23}{25}$
   c. $\frac{19}{20}$ d. $\frac{18}{20}$

12. Jasmine divides a piece of poster board into equal sections and uses the shaded sections for an art project.



What percent of the poster board does Jasmine have left for other projects?

   a. 75% b. 25%
   c. 9% d. 3%