

I would like to take a moment to introduce myself to you and welcome you to the 6th grade. My name is Miss Kevil. I teach the regular education sixth grade math classes. However, some students will be taking math with the Resource Room teacher who teaches replacement math.

The transition from 5th grade to 6th grade can be filled with much excitement as well as nervousness and apprehension. In an effort to make this transition smoother and prepare students for the upcoming academic year, we have prepared a summer packet for them. In order for your child to be adequately prepared for sixth grade math, it is important that they remember some information that was taught to them in previous years. Also, it is essential that every student has the basic facts of addition, subtraction, multiplication, and division committed to memory. The students are expected to know their multiplication facts up to and including twelve times-tables.

We ask that you participate in our quest for student success by reviewing these items with your child throughout the summer. This packet includes notes that students should have committed to memory, multiplication practice (which may be recopied so students can practice their basic facts repeatedly), and several pages of skill practice that a sixth grader should know at the beginning of the school year. Students may be quizzed on all of these items during the first week of school. Additionally, each student who returns this packet signed by a parent or guardian on the first day of school will receive 10 extra credit bonus points on the first quiz of the school year.

If you have any questions, please do not hesitate to contact me at fkevil@htps.org . I will check it periodically throughout the summer.

Thank you in advance for your cooperation, and we look forward to meeting you at our Back to School Night in September. Have a great summer!

Sincerely,
Francie Kevil and the 6th grade Resource Room Teacher

Student's Name

Parent/Guardian's Signature (Signatures only, no initials please)

MEASUREMENT:

Length:

12 inches = 1 foot
36 inches = 3 feet = 1 yard

Capacity:

8 fluid ounces = 1 cup
2 cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon

Mass:

16 ounces = 1 pound
2,000 pounds = 1 ton

Abbreviations:

inch = in
foot = ft
yard = yd
mile = mi
fluid ounces = fl. oz.
cup = c
pint = pt
quart = qt
gallon = gal
ounce = oz
pound = lb
ton = T

EVEN NUMBER – Any whole number that is divisible by 2.

ODD NUMBER – Any whole number that is not divisible by 2.

SUM – The answer to an addition problem

DIFFERENCE – The answer to a subtraction problem

PRODUCT – The answer to a multiplication problem

QUOTIENT – The answer to a division problem

DIVISIBILITY RULES:

- A number is divisible by 2 if the ones digit is divisible by 2.
- A number is divisible by 5 if the ones digit is a 0 or a 5.
- A number is divisible by 10 if the ones digit is a 0.

PLACE VALUE:

HUNDRED- THOUSANDS	TEN- THOUSANDS	THOUSANDS	HUNDREDS	TENS	ONES	TENTHS	HUNDREDTHS	THOUSANDTHS	TEN- THOUSANDTHS

FRACTION/DECIMAL EQUIVALENTS:

$$\frac{1}{4} = 0.25$$

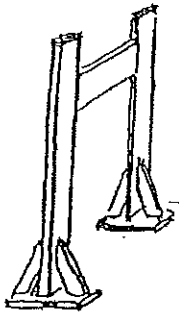
$$\frac{1}{2} = 0.5$$

$$\frac{3}{4} = 0.75$$

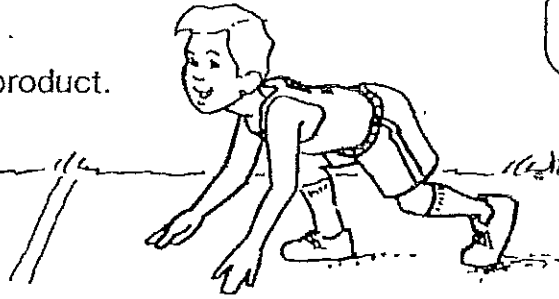
Name _____

Skill: Multiplication facts, 0-9 as factors

Over the Hurdle



Multiply and write each product.



Score _____
100

- | | | | | |
|-------------------------|----------------------|----------------------|----------------------|----------------------|
| A. $3 \times 4 =$ _____ | $6 \times 5 =$ _____ | $0 \times 9 =$ _____ | $4 \times 5 =$ _____ | $1 \times 7 =$ _____ |
| B. $8 \times 8 =$ _____ | $5 \times 4 =$ _____ | $7 \times 0 =$ _____ | $2 \times 9 =$ _____ | $7 \times 8 =$ _____ |
| C. $2 \times 0 =$ _____ | $8 \times 7 =$ _____ | $1 \times 8 =$ _____ | $6 \times 4 =$ _____ | $8 \times 0 =$ _____ |
| D. $9 \times 5 =$ _____ | $0 \times 3 =$ _____ | $9 \times 9 =$ _____ | $7 \times 9 =$ _____ | $3 \times 5 =$ _____ |
| E. $4 \times 4 =$ _____ | $9 \times 6 =$ _____ | $9 \times 4 =$ _____ | $0 \times 2 =$ _____ | $4 \times 6 =$ _____ |
| F. $1 \times 6 =$ _____ | $3 \times 0 =$ _____ | $5 \times 3 =$ _____ | $8 \times 6 =$ _____ | $1 \times 1 =$ _____ |
| G. $5 \times 5 =$ _____ | $6 \times 3 =$ _____ | $7 \times 1 =$ _____ | $1 \times 9 =$ _____ | $5 \times 7 =$ _____ |
| H. $7 \times 2 =$ _____ | $1 \times 0 =$ _____ | $4 \times 3 =$ _____ | $6 \times 6 =$ _____ | $5 \times 2 =$ _____ |
| I. $0 \times 4 =$ _____ | $8 \times 1 =$ _____ | $2 \times 1 =$ _____ | $2 \times 7 =$ _____ | $6 \times 8 =$ _____ |
| J. $8 \times 2 =$ _____ | $3 \times 6 =$ _____ | $7 \times 3 =$ _____ | $5 \times 1 =$ _____ | $3 \times 1 =$ _____ |
| K. $6 \times 9 =$ _____ | $0 \times 6 =$ _____ | $4 \times 7 =$ _____ | $3 \times 9 =$ _____ | $0 \times 5 =$ _____ |
| L. $2 \times 2 =$ _____ | $6 \times 2 =$ _____ | $1 \times 5 =$ _____ | $5 \times 6 =$ _____ | $7 \times 7 =$ _____ |
| M. $9 \times 3 =$ _____ | $2 \times 4 =$ _____ | $8 \times 9 =$ _____ | $4 \times 2 =$ _____ | $2 \times 3 =$ _____ |
| N. $4 \times 8 =$ _____ | $6 \times 7 =$ _____ | $0 \times 1 =$ _____ | $1 \times 2 =$ _____ | $6 \times 1 =$ _____ |
| O. $7 \times 6 =$ _____ | $3 \times 2 =$ _____ | $8 \times 3 =$ _____ | $9 \times 0 =$ _____ | $4 \times 9 =$ _____ |
| P. $1 \times 3 =$ _____ | $0 \times 8 =$ _____ | $5 \times 8 =$ _____ | $3 \times 7 =$ _____ | $3 \times 3 =$ _____ |
| Q. $8 \times 5 =$ _____ | $9 \times 7 =$ _____ | $7 \times 5 =$ _____ | $2 \times 5 =$ _____ | $9 \times 8 =$ _____ |
| R. $4 \times 1 =$ _____ | $2 \times 8 =$ _____ | $5 \times 0 =$ _____ | $7 \times 4 =$ _____ | $3 \times 8 =$ _____ |
| S. $5 \times 9 =$ _____ | $0 \times 0 =$ _____ | $9 \times 1 =$ _____ | $1 \times 4 =$ _____ | $8 \times 4 =$ _____ |
| T. $2 \times 6 =$ _____ | $9 \times 2 =$ _____ | $4 \times 0 =$ _____ | $6 \times 0 =$ _____ | $0 \times 7 =$ _____ |

Brainwork! How would you solve this multiplication problem? $4 \times 2 \times 3 =$ _____

Write the steps.

Review

Example 1

Find $6 \overline{)486}$.

$$\begin{array}{r} 81 \\ 6 \overline{)486} \\ \underline{-48} \\ 6 \\ \underline{-6} \\ 0 \end{array}$$

Divide each place-value position from left to right.

Since $6 - 6 = 0$, there is no remainder.

Example 2

Find $12 \overline{)276}$.

$$\begin{array}{r} 23 \\ 12 \overline{)276} \\ \underline{-24} \\ 36 \\ \underline{-36} \\ 0 \end{array}$$

Divide each place-value position from left to right.

Since $36 - 36 = 0$, there is no remainder.

Exercises

Divide.

1. $4 \overline{)80}$

2. $6 \overline{)72}$

3. $5 \overline{)430}$

4. $8 \overline{)224}$

5. $15 \overline{)390}$

6. $14 \overline{)252}$

7. $41 \overline{)492}$

8. $37 \overline{)629}$

1. _____

2. _____

3. _____

4. _____

5. _____

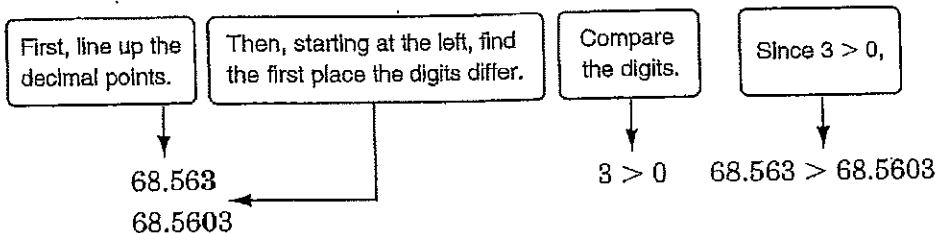
6. _____

7. _____

8. _____

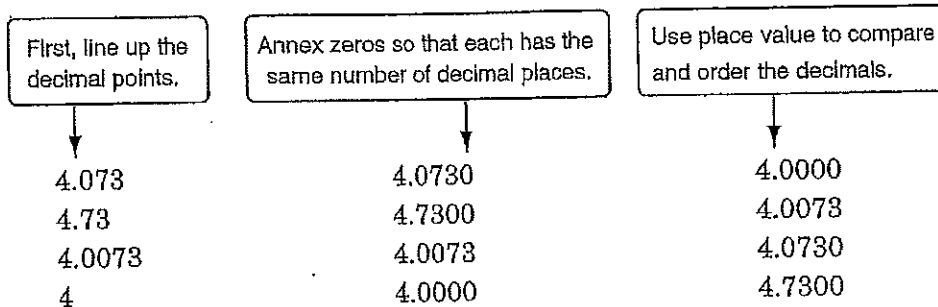
Comparing and Ordering Decimals

EXAMPLE 1 Use $>$ or $<$ to compare 68.563 and 68.5603.



So, 68.563 is greater than 68.5603.

EXAMPLE 2 Order 4.073, 4.73, 4.0073, and 4 from least to greatest.



The order from least to greatest is 4, 4.0073, 4.073, and 4.73.

EXERCISES

Use $>$, $<$, or $=$ to compare each pair of decimals.

1. $4.08 \odot 4.080$

2. $0.001 \odot 0.01$

3. $23.659 \odot 22.659$

4. $50.031 \odot 50.030$

5. $7 \odot 7.0001$

6. $18.01 \odot 18.010$

Order each set of decimals from least to greatest.

7. 0.006, 0.6, 0.060, 6

8. 456.73, 465.32, 456.37, 456.23

9. 3.01, 3.009, 3.09, 3.0001

10. 45.333, 45.303, 45.03, 45.003, 45.0003

Adding and Subtracting Decimals

To add or subtract decimals, line up the decimal points then add or subtract digits in the same place-value position. Estimate first so you know if your answer is reasonable.

EXAMPLE 1 Find the sum of $61.32 + 8.26$.

First, estimate the sum using front-end estimation.

$$61.32 + 8.26 \rightarrow 61 + 8 = 69$$

$$\begin{array}{r} 61.32 \\ + 8.26 \\ \hline 69.58 \end{array}$$

Since the estimate is close, the answer is reasonable.

EXAMPLE 2 Find $2.65 - 0.2$.

$$\text{Estimate: } 2.65 - 0.2 \rightarrow 3 - 0 = 3$$

$$\begin{array}{r} 2.65 \\ - 0.20 \\ \hline 2.45 \end{array} \quad \text{Annex a zero.}$$

Since the estimate is close, the answer is reasonable.

EXERCISES

Add or subtract.

1. $\begin{array}{r} 2.8 \\ + 4.1 \\ \hline \end{array}$

2. $\begin{array}{r} \$13.67 \\ - 7.19 \\ \hline \end{array}$

3. $\begin{array}{r} 0.0123 \\ - 0.0028 \\ \hline \end{array}$

4. $\begin{array}{r} 132.346 \\ + 0.486 \\ \hline \end{array}$

5. $\begin{array}{r} 113.7999 \\ + 6.2001 \\ \hline \end{array}$

6. $\begin{array}{r} 0.0058 \\ - 0.0026 \\ \hline \end{array}$

7. $\begin{array}{r} \$5.63 \\ + 4.10 \\ \hline \end{array}$

8. $\begin{array}{r} 5.00921 \\ - 4.00013 \\ \hline \end{array}$

9. $0.2 + 5.64 + 9.005$

10. $12.36 - 4.081$

11. $216.8 - 34.055$

12. $4.62 + 3.415 + 2.4$

Name _____

Date _____

Multiplying Decimals by Whole Numbers

When you multiply a decimal by a whole number, multiply as with whole numbers. The product must have the same number of decimal places as the decimal factor.

Examples 1 Find 6×5.43 .

$$\begin{array}{r} 5.43 \leftarrow \text{two decimal places} \\ \times 6 \\ \hline 32.58 \leftarrow \text{two decimal places} \end{array}$$

2 Find 120×0.056 .

$$\begin{array}{r} 0.056 \leftarrow \text{three decimal places} \\ \times 120 \\ \hline 1120 \\ + 56 \\ \hline 6.720 \leftarrow \text{three decimal places} \end{array}$$

Multiply.

1. $\begin{array}{r} 0.7 \\ \times 9 \\ \hline \end{array}$

2. $\begin{array}{r} 0.78 \\ \times 17 \\ \hline \end{array}$

3. $\begin{array}{r} 0.09 \\ \times 101 \\ \hline \end{array}$

4. $\begin{array}{r} 6.2 \\ \times 12 \\ \hline \end{array}$

5. $\begin{array}{r} 4.12 \\ \times 22 \\ \hline \end{array}$

6. $\begin{array}{r} 10.4 \\ \times 221 \\ \hline \end{array}$

7. $\begin{array}{r} 131.5 \\ \times 55 \\ \hline \end{array}$

8. $\begin{array}{r} 0.3 \\ \times 494 \\ \hline \end{array}$

9. $3,330 \times 0.05$

10. 75×0.003

11. 9×5.05

Solve each equation.

12. $f = 8 \times 0.006$

13. $a = 205 \times 0.22$

14. $t = 31 \times 1.12$

Dividing Decimals by Whole Numbers

When you divide a decimal by a whole number, place the decimal point in the quotient above the decimal point in the dividend. Then divide as you do with whole numbers.

EXAMPLE 1 Find $8.73 \div 9$.

Estimate: $9 \div 9 = 1$

$\begin{array}{r} 0.97 \\ 9 \overline{)8.73} \\ \underline{-0} \\ 87 \\ \underline{-81} \\ 63 \\ \underline{-63} \\ 0 \end{array}$	Place the decimal point directly above the decimal point in the quotient.
Divide as with whole numbers.	

$8.73 \div 9 = 0.97$ Compared to the estimate, the quotient is reasonable.

EXAMPLE 2 Find $8.58 \div 12$.

Estimate: $10 \div 10 = 1$

$\begin{array}{r} 0.715 \\ 12 \overline{)8.580} \\ \underline{-84} \\ 18 \\ \underline{-12} \\ 60 \\ \underline{-60} \\ 0 \end{array}$	Place the decimal point.
Annex a zero to continue dividing.	

$8.58 \div 12 = 0.715$ Compared to the estimate, the quotient is reasonable.

EXERCISES

Divide.

- | | | | |
|------------------------|------------------------|-----------------|------------------|
| 1. $4 \overline{)9.2}$ | 2. $5 \overline{)4.5}$ | 3. $8.6 \div 2$ | 4. $2.89 \div 4$ |
| 5. $4 \overline{)3.2}$ | 6. $3 \overline{)7.2}$ | 7. $7.5 \div 5$ | 8. $3.25 \div 5$ |

Simplifying Fractions

Replace each ● with a number so that the fractions are equivalent.

1. $\frac{1}{5} = \frac{\bullet}{35}$

2. $\frac{\bullet}{15} = \frac{2}{5}$

3. $\frac{1}{6} = \frac{\bullet}{24}$

4. $\frac{10}{15} = \frac{2}{\bullet}$

5. $\frac{4}{\bullet} = \frac{20}{45}$

6. $\frac{1}{\bullet} = \frac{4}{16}$

7. $\frac{1}{3} = \frac{27}{\bullet}$

8. $\frac{\bullet}{7} = \frac{8}{28}$

9. $\frac{18}{24} = \frac{\bullet}{4}$

Write each fraction in simplest form. If the fraction is already in simplest form, write *simplest form*.

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

11. $\frac{8}{10}$

12. $\frac{20}{60}$

13. $\frac{6}{15}$

14. $\frac{15}{60}$

15. $\frac{7}{8}$

16. $\frac{27}{81}$

17. $\frac{7}{12}$

18. $\frac{28}{36}$

19. $\frac{90}{100}$

20. $\frac{8}{21}$

21. $\frac{14}{35}$

22. $\frac{23}{46}$

23. $\frac{9}{13}$

24. $\frac{12}{27}$

25. $\frac{4}{12}$

26. $\frac{75}{100}$

27. $\frac{60}{110}$

28. $\frac{10}{25}$

29. $\frac{15}{19}$

30. $\frac{20}{28}$

31. $\frac{49}{56}$

32. $\frac{49}{70}$

33. $\frac{24}{64}$

Review

To estimate sums and differences of mixed numbers, round each mixed number to the nearest whole number.

Example 1

Estimate $3\frac{1}{6} + 2\frac{5}{8}$.

$\frac{1}{6} < \frac{1}{2}$, so $3\frac{1}{6}$ rounds down to 3.

$\frac{5}{8} > \frac{1}{2}$, so $2\frac{5}{8}$ rounds up to 3.

$3 + 3 = 6$

So, $3\frac{1}{6} + 2\frac{5}{8}$ is *about* 6.

Example 2

Estimate $8\frac{5}{6} - 3\frac{2}{3}$.

$\frac{5}{6} > \frac{1}{2}$, so $8\frac{5}{6}$ rounds up to 9.

$\frac{2}{3} > \frac{1}{2}$, so $3\frac{2}{3}$ rounds up to 4.

$9 - 4 = 5$

So, $8\frac{5}{6} - 3\frac{2}{3}$ is *about* 5.

Exercises

Estimate.

1. $8\frac{1}{5} + 9\frac{5}{8}$

1. _____

2. $5\frac{7}{12} + 1\frac{3}{8}$

2. _____

3. $4\frac{1}{6} + 11\frac{3}{10}$

3. _____

4. $5\frac{1}{6} + 4\frac{1}{3}$

4. _____

5. $10\frac{1}{5} - 9\frac{4}{7}$

5. _____

6. $9\frac{9}{15} - 3\frac{7}{8}$

6. _____

7. $7\frac{2}{3} - 2\frac{6}{7}$

7. _____

8. $6\frac{7}{8} - 3\frac{1}{4}$

8. _____

Review**Example 1**Find $\frac{5}{7} + \frac{2}{3}$. Write in simplest form.

$$\frac{5}{7} + \frac{2}{3} = \frac{5 \times 3}{7 \times 3} + \frac{2 \times 7}{3 \times 7}$$

Rename using the LCD, 21.

$$= \frac{15}{21} + \frac{14}{21}$$

Add the fractions.

$$= \frac{29}{21}$$

Simplify.

$$= 1\frac{8}{21}$$

Rewrite as a mixed number.

Example 2Find $\frac{4}{9} - \frac{1}{3}$. Write in simplest form.

$$\frac{4}{9} - \frac{1}{3} = \frac{4}{9} - \frac{1 \times 3}{3 \times 3}$$

Rename using the LCD, 9.

$$= \frac{4}{9} - \frac{3}{9}$$

Subtract the fractions.

$$= \frac{1}{9}$$

Simplify.

Add or subtract. Write in simplest form.

1. $\frac{3}{4} + \frac{1}{5}$

2. $\frac{2}{5} - \frac{1}{4}$

1. _____

3. $\frac{8}{9} - \frac{1}{3}$

4. $\frac{2}{7} + \frac{4}{5}$

2. _____

5. $\frac{7}{8} + \frac{1}{2}$

6. $\frac{5}{6} - \frac{1}{4}$

3. _____

7. $\frac{7}{9} - \frac{2}{5}$

8. $\frac{6}{7} + \frac{7}{8}$

4. _____

9. $\frac{4}{5} + \frac{1}{9}$

10. $\frac{3}{8} - \frac{1}{7}$

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Review

Example

Find the GCF of 20 and 48.

First make an organized list of the factors for each number.

20: 1, 2, 4, 5, 10, 20

48: 1, 2, 3, 4, 6, 8, 12, 16, 24, 48

The common factors are 1, 2, and 4, and the greatest of these is 4. So, the greatest common factor, or GCF, of 20 and 48 is 4.

Exercises

Find the GCF of each set of numbers.

1. 22 and 36

1. _____

2. 12 and 18

2. _____

3. 40 and 56

3. _____

4. 28 and 70

4. _____

5. 32 and 76

5. _____

6. 45, 51, and 63

6. _____

7. 24, 60, and 72

7. _____

8. 35, 65, and 90

8. _____

9. 21, 42, and 84

9. _____

10. 18, 27, and 30

10. _____

Review

Example 1

Find $42 \div 6$.

$$\begin{array}{r} 7 \\ 6 \overline{)42} \\ \underline{-42} \\ 0 \end{array}$$

THINK: What number times 6 is 42?

Example 2

Find $24 \div 2$.

$$\begin{array}{r} 12 \\ 2 \overline{)24} \\ \underline{-24} \\ 0 \end{array}$$

THINK: What number times 2 is 24?

So, $42 \div 6 = 7$.

So, $24 \div 2 = 12$.

Divide.

1. $64 \div 8$

1. _____

2. $63 \div 7$

2. _____

3. $16 \div 4$

3. _____

4. $81 \div 9$

4. _____

5. $25 \div 5$

5. _____

6. $26 \div 13$

6. _____

7. $100 \div 10$

7. _____

8. $121 \div 11$

8. _____

9. $108 \div 9$

9. _____

10. $144 \div 12$

10. _____

Least Common Multiple

A **multiple** of a number is the product of the number and any whole number. The multiples of 2 are below.

$$1 \times 2 = 2 \quad 2 \times 2 = 4 \quad 3 \times 2 = 6 \quad 4 \times 2 = 8 \quad 5 \times 2 = 10$$

The smallest number other than 0 that is a multiple of two or more whole numbers is the **least common multiple (LCM)** of the numbers.

EXAMPLE 1 Find the LCM of 4 and 6 by making a list.

Step 1 List the nonzero multiples.

multiples of 4: 4, 8, 12, 16, 20, ...

multiples of 6: 6, 12, 18, 24, 30, ...

Step 2 Identify the LCM from the common multiples.

The LCM of 4 and 6 is 12.

EXAMPLE 2 Find the LCM of 6 and 15 by using prime factors.

Step 1 Write the prime factorization of each number.

$$\begin{array}{c} 6 \\ \swarrow \quad \searrow \\ 2 \times 3 \end{array} \quad \begin{array}{c} 15 \\ \swarrow \quad \searrow \\ 3 \times 5 \end{array}$$

Step 2 Identify all common prime factors.

$$6 = 2 \times 3$$

$$15 = 3 \times 5$$

Step 3 Find the product of all of the prime factors using each common prime factor once and any remaining factors.

The LCM is $2 \times 3 \times 5$ or 30.

EXERCISES

Find the LCM of each set of numbers.

1. 2 and 4

2. 5 and 10

3. 3 and 7

4. 5 and 6

5. 6 and 9

6. 4 and 10

7. 9 and 27

8. 4 and 6

9. 5 and 7

Name _____

Date _____ Homeroom _____

Order of Operations Review

1. $19 \times 3 + 7 \times 6$ 1. _____

2. $40 \div 8 + 3 \times 7 \times 4$ 2. _____

3. $99 \div 11 \div 3 + 25$ 3. _____

4. $13 \times 5 \times 6 - 9 \times 2$ 4. _____

5. $125 \div 5 + 8 \times 9 - 3$ 5. _____

6. $63 \div 7 + 8 \times 3 \times 2$ 6. _____

7. $4 \times 4 + 2 \times 5 \times 7$ 7. _____

8. $72 \div 3 + 14 \times 2$ 8. _____

9. $45 \div 3 \div 5 + 8 \times 5$ 9. _____

10. $4 \times 3 \times 8 \div 2$ 10. _____

Review

The side lengths of a square are all the same length. To find the area of a square you multiply the lengths of the two sides together.

Example 1

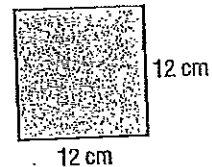
Find the area of a square shown at the right.

$$A = s \times s \quad \text{Area of a square}$$

$$A = 12 \times 12 \quad \text{Replace } s \text{ with } 12.$$

$$A = 144 \quad \text{Multiply.}$$

The area of the square is 144 square centimeters.



Example 2

Find the area of a square with a side length of 6 inches.

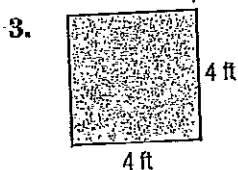
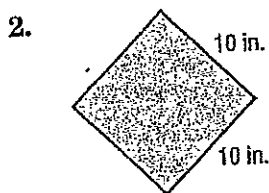
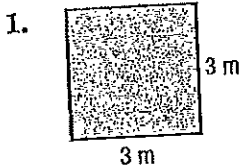
$$A = s \times s \quad \text{Area of a square}$$

$$A = 6 \times 6 \quad \text{Replace } s \text{ with } 6.$$

$$A = 36 \quad \text{Multiply.}$$

The area of the square is 36 square inches.

Find the area of each square.



4. Find the area of a square with a side length of 11 feet.

5. Find the area of a square with a side length of 7 meters.

6. Find the area of a square with a side length of 13 centimeters.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____