While summertime is a time for relaxation and less structure, it is also a time to refresh, review, and enrich. Studies show that an hour a week is all that it takes to strengthen math skills and say goodbye to the summer learning loss.
The summer work file contains several review concepts and skills that are essential for success in both grade level and advanced math classes next year. You will need to download this file and print it. You will need to clearly answer the questions and show the work associated with your answers. Work should be easily identifiable with the problem it is for and readable!

This packet is broken into two sections: Part 1 and Part 2. Part 1 must be completed by all students regardless of their math placement. Part 2 must be completed by all advanced math students, and anyone desiring to have the opportunity to join the advanced math class.

Calculators should not be used unless working with percent concepts.
These packets will be collected by the math teachers on Friday, August 25, 2023.
Mathematical foundational skills are essential life skills no matter what math class you are in. We recommend that you also start (and keep) a math journal whenever you use problems solving skills or logical skills as you are using math. You'd be surprised at all the places you use math without realizing you are using math!

St. Bonaventure Math Teachers

MATH

REVIEW PACKET

FOR

5TH into 6TH GRADE

While summertime is a time for relaxation and less structure it is also a time to refresh, review, and enrich. This file contains several review concepts and skills that are essential for success in both grade level and advanced math classes next year. You will need to print this file.

This packet is broken into two sections: Part 1 and Part 2. Part 1 must be completed by all students regardless of their math placement. Part 2 must be completed by all advanced math students, and anyone desiring to have the opportunity to join the advanced math class.

Calculators should not be used unless working with percent concepts. All work should be shown and easy to read, with answers clearly identified.

These packets will be collected by the math teachers at the end of the first week of school.

Studies show that an hour a week is all that it takes to strengthen math skills and say goodbye to summer learning loss. Mathematical foundational skills are essential no matter what math class you are in.

Summer Math Packet

Part 1

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

$$\begin{array}{r} {\scriptstyle 1\ \ 3} \\ 3,481 \\ \times\ \ 142 \\ \hline 6962 \\ +\ 139240 \\ \ \ 348100 \\ \hline 494,302 \end{array}$$

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

$$\begin{array}{r} 305\ R20 \\ 21\overline{)6425} \\ -63\downarrow\ \ \ \\ \hline 12\ \ \ \\ -\ 0\ \ \ \\ \hline 125\ \ \ \\ -\ 105\ \ \ \\ \hline 20 \end{array}$$

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

52.943

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

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

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 x 0.8

$$\begin{array}{r} {}^{1}3.{}^{3}24 \\ \times\ \ 0.8 \\ \hline 2592 \end{array}$$

3.24 → 2 decimal places
0.8 → 1 decimal place
3 decimal places

2.592

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 ÷ 0.5

$$\begin{array}{r} 64.6 \\ 0.5\overline{)32.3^{\uparrow}0} \\ -30 \\ \hline 23 \\ -20 \\ \hline 30 \\ -30 \\ \hline 0 \end{array}$$

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

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

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

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

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

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

$= \boxed{4}$

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. $2\frac{2}{15} - 1\frac{2}{3}$

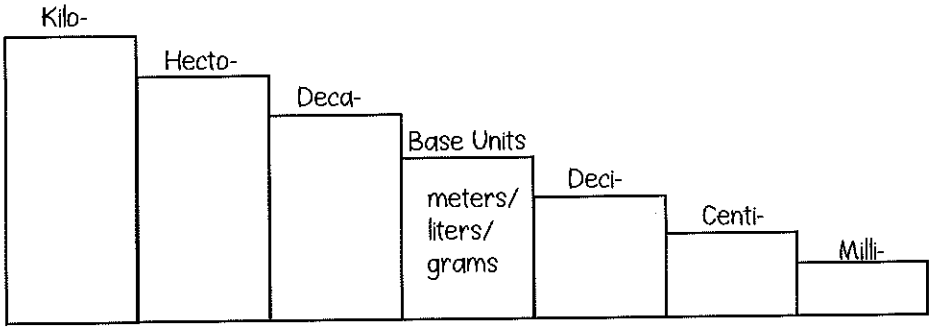
Find each product or quotient. Show your work.

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 $^1/_2$ 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



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 ÷ 2 = 9 pints

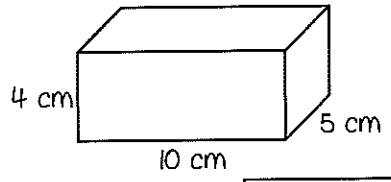
Volume

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



V = 4 x 10 x 5 = 200 cm^3

Convert each Metric measurement. Show your work.

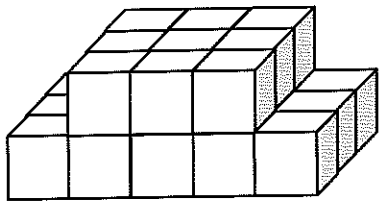
85. 1.9 km = _____ m	86. 23 g = _____ mg	87. 350 mℓ = _____ kℓ
88. 0.07 kg = _____ cg	89. 6 cm = _____ m	90. 35 mℓ = _____ ℓ

Convert each Customary measurement. Show your work.

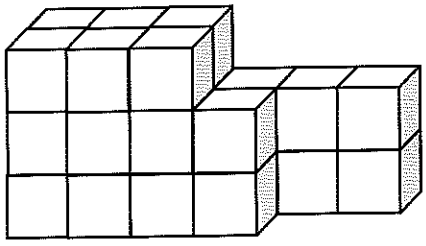
91. 48 in = _____ ft	92. 6 pt = _____ c	93. 3 T = _____ lb
94. 1.5 mi = _____ ft	95. 32 pt = _____ gal	96. 32 oz = _____ lb

Find the volume of each figure. Show your work.

97.



98.



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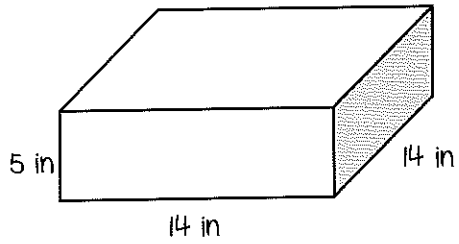

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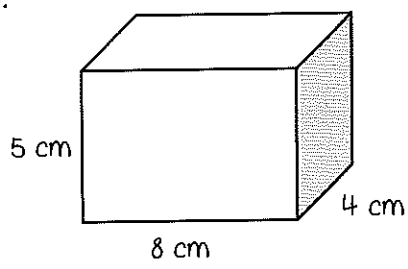


REVIEW: Equivalent Fractions

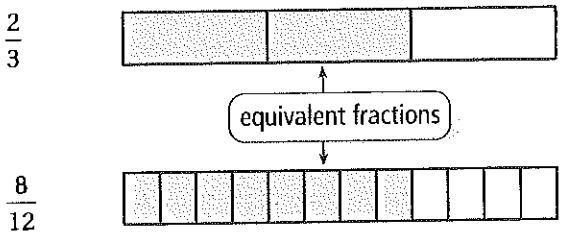
Name _____

Key Concept and Vocabulary

$$\frac{2}{3} = \frac{2 \cdot 4}{3 \cdot 4} = \frac{8}{12}$$

Multiply numerator and denominator by the same number.

Visual Model



Skill Examples

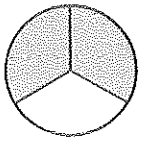
1. $\frac{1}{2} = \frac{1 \cdot 2}{2 \cdot 2} = \frac{2}{4}$
2. $\frac{1}{2} = \frac{1 \cdot 3}{2 \cdot 3} = \frac{3}{6}$

$\frac{1}{2}$, $\frac{2}{4}$, and $\frac{3}{6}$ are all equivalent.

3. $\frac{3}{4} = \frac{3 \cdot 5}{4 \cdot 5} = \frac{15}{20}$
4. $\frac{4}{5} = \frac{4 \cdot 20}{5 \cdot 20} = \frac{80}{100}$

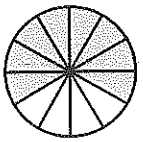
Application Example

5. You eat two-thirds of a pizza that has 12 pieces. How many pieces do you eat?



$$\frac{2}{3} = \frac{2 \cdot 4}{3 \cdot 4} = \frac{8}{12}$$

$\therefore$ You eat 8 pieces.



PRACTICE MAKES *PURR*-FECT™

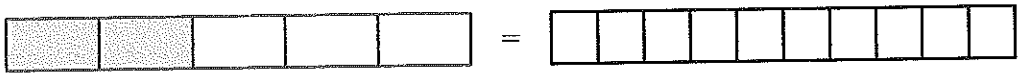
Check your answers at BigIdeasMath.com.

Write a fraction that is equivalent to the given fraction.

6. $\frac{1}{2} = \frac{\square}{4}$
7. $\frac{3}{5} = \frac{\square}{15}$
8. $\frac{4}{3} = \frac{\square}{9}$
9. $\frac{1}{3} = \frac{\square}{27}$
10. $\frac{2}{5} = \frac{\square}{20}$
11. $\frac{7}{8} = \frac{\square}{64}$
12. $\frac{3}{7} = \frac{6}{\square}$
13. $\frac{9}{4} = \frac{36}{\square}$
14. $\frac{1}{5} = \frac{10}{\square}$
15. $\frac{3}{9} = \frac{12}{\square}$
16. $\frac{7}{10} = \frac{14}{\square}$
17. $\frac{3}{8} = \frac{9}{\square}$

Shade the model so that the fraction is equivalent.

18. 

19. 

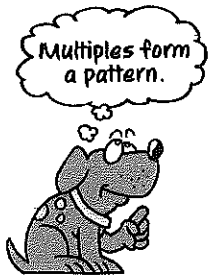
20. **PIZZA** You eat three-fourths of a pizza that has 12 pieces. How many pieces do you eat? _____

21. **SURVEY** A survey asked 240 people if they liked the movie "Star Wars." One-third liked it, one-sixth did not like it, and one-half had not seen it. How many people are in each of the three categories? _____

Multiples

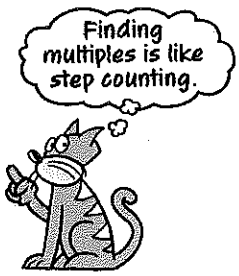
Name _____

Key Concept and Vocabulary



Multiples of 3

1	2	(3)	4	5	(6)	7	8	(9)
10	11	(12)	13	14	(15)	16	17	(18)
19	20	(21)	22	23	(24)	25	26	(27)
28	29	(30)	31	32	(33)	34	35	(36)



PRACTICE MAKES *PURR*-FECT™

Check your answers at BigIdeasMath.com.

1. Circle the numbers that are multiples of 2.

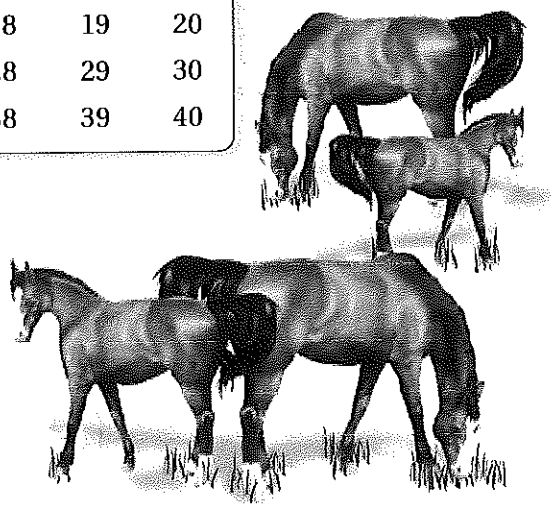
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

2. Circle the numbers that are multiples of 5.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

3. Circle the numbers that are multiples of 2 *and* 5.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40



4. **HORSES** In a group of horses, the total number of horse hooves is a multiple of _____.

5. **BIRDS** In a flock of birds, the total number of wings is a multiple of _____.

Summer Math Packet

Part 2

REVIEW: Least Common Multiple

Name _____

Key Concept and Vocabulary

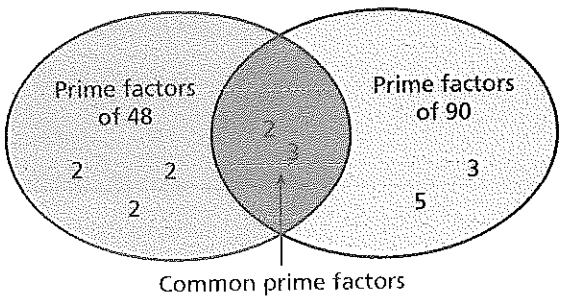
The **least common multiple (LCM)** of two or more positive monomials is the product of their factors, using each common prime factor only once.

Prime factorization:

$30 = 2 \cdot 3 \cdot 5$
$42 = 2 \cdot 3 \cdot 7$

The LCM of 30 and 42 is $2 \cdot 3 \cdot 5 \cdot 7 = 210$.

Visual Model



$LCM = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 = 720$

Skill Examples

1. $15 = 3 \cdot 5$
   $30 = 2 \cdot 3 \cdot 5$
   $LCM = 2 \cdot 3 \cdot 5 = 30$

2. $20 = 2 \cdot 2 \cdot 5$
   $28 = 2 \cdot 2 \cdot 7$
   $LCM = 2 \cdot 2 \cdot 5 \cdot 7 = 140$

3. $48 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$
   $90 = 2 \cdot 3 \cdot 3 \cdot 5$
   $LCM = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 = 720$

4. $18x^3 = 2 \cdot 3 \cdot 3 \cdot x \cdot x \cdot x$
   $21x^2 = 3 \cdot 7 \cdot x \cdot x$
   $LCM = 2 \cdot 3 \cdot 3 \cdot 7 \cdot x \cdot x \cdot x = 126x^3$

Application Example

5. Hot dogs come in packages of 10 and hot dog buns come in packages of 8. What is the least number of packages of each that you need to buy to have the same number of hot dogs and hot dog buns?

   $10 = 2 \cdot 5$
   $8 = 2 \cdot 2 \cdot 2$
   } $LCM = 2 \cdot 2 \cdot 2 \cdot 5 = 40$

   $40 \div 10 = 4$ packages of hot dogs
   $40 \div 8 = 5$ packages of hot dog buns

   ∴ You must buy 4 packages of hot dogs and 5 packages of hot dog buns.

PRACTICE MAKES *PURR*-FECT™

Check your answers at BigIdeasMath.com.

Find the least common multiple.

6. $36 =$ _____ $LCM =$ _____
   $45 =$ _____

7. $70 =$ _____ $LCM =$ _____
   $98 =$ _____

8. $42 =$ _____ $LCM =$ _____
   $105 =$ _____

9. $154 =$ _____ $LCM =$ _____
   $231 =$ _____

10. $27y =$ _____ $LCM =$ _____
    $54y^3 =$ _____

11. $56m^5 =$ _____ $LCM =$ _____
    $68m^4 =$ _____

12. **BOXES** Boxes that are 12 inches tall are being stacked next to boxes that are 18 inches tall. What is the shortest height at which the two stacks will be the same height? height = _____

REVIEW: Greatest Common Factor

Name _____

Key Concept and Vocabulary

The **greatest common factor (GCF)** of two or more positive monomials is the product of their common prime factors.

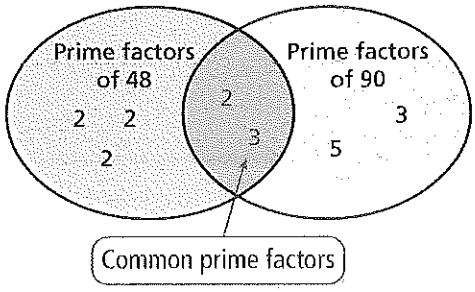
Prime factorization:

$165 = 3 \cdot 5 \cdot 11$

$210 = 2 \cdot 3 \cdot 5 \cdot 7$

The GCF of 165 and 210 is $3 \cdot 5 = 15$.

Visual Model



GCF $= 2 \cdot 3 \cdot 6$

Skill Examples

1. $15 = 3 \cdot 5$
   $30 = 2 \cdot 3 \cdot 5$
   GCF $= 3 \cdot 5 = 15$

2. $20 = 2 \cdot 2 \cdot 5$
   $28 = 2 \cdot 2 \cdot 7$
   GCF $= 2 \cdot 2 = 4$

3. $48 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$
   $90 = 2 \cdot 3 \cdot 3 \cdot 5$
   GCF $= 2 \cdot 3 = 6$

4. $18x^3 = 2 \cdot 3 \cdot 3 \cdot x \cdot x \cdot x$
   $21x^2 = 3 \cdot 7 \cdot x \cdot x$
   GCF $= 3 \cdot x \cdot x = 3x^2$

Application Example

5. You have 48 red flowers, 60 yellow flowers, and 84 white flowers. You want to make flower arrangements that have the same number of each color. What is the greatest number of arrangements that you can make if every flower is used?

   $48 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$
   $60 = 2 \cdot 2 \cdot 3 \cdot 5$
   $84 = 2 \cdot 2 \cdot 3 \cdot 7$
   } GCF $= 2 \cdot 2 \cdot 3 = 12$

   ∴ You can make 12 arrangements.

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Check your answers at BigIdeasMath.com.

Find the greatest common factor.

6. $36 =$ _____ GCF = _____
   $45 =$ _____

7. $70 =$ _____ GCF = _____
   $98 =$ _____

8. $42 =$ _____ GCF = _____
   $105 =$ _____

9. $154 =$ _____ GCF = _____
   $231 =$ _____

10. $27y =$ _____ GCF = _____
    $54y^3 =$ _____

11. $56m^5 =$ _____ GCF = _____
    $68m^4 =$ _____

12. **CLOTH** You have two pieces of cloth. One piece is 80 inches wide and the other is 96 inches wide. You want to cut both pieces into strips of equal width that are as wide as possible. How wide should you cut each strip? width = _____

REVIEW: Factors of Whole Numbers

Name _____

Key Concept and Vocabulary

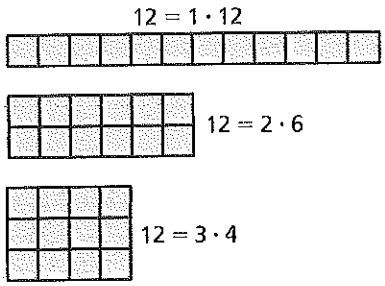
Factors of 12: 1, 2, 3, 4, (6), 12

Factors of 18: 1, 2, 3, (6), 9, 18

Greatest Common Factor

Visual Model

There are 3 ways to factor 12 into 2 whole numbers. Each way is represented by a rectangle.



Skill Examples

1. Factors of 1: 1
2. Factors of 8: 1, 2, 4, 8
3. Factors of 7: 1, 7
4. Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30
5. Factors of 33: 1, 3, 11, 33

Application Example

6. What is the greatest number of people with whom 20 pennies and 24 dimes can be shared so that each person gets the same share?

   The greatest common factor (GCF) of 20 and 24 is 4.

   ∴ The greatest number is 4 people.

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Check your answers at BigIdeasMath.com.

List all factors of both numbers. Then circle the greatest common factor.

7. Factors of 6: _____
   Factors of 9: _____
8. Factors of 8: _____
   Factors of 16: _____
9. Factors of 20: _____
   Factors of 30: _____
10. Factors of 75: _____
    Factors of 100: _____
11. Factors of 34: _____
    Factors of 51: _____
12. Factors of 10: _____
    Factors of 18: _____
13. Sketch all possible ways that 16 small squares can be arranged to form a rectangle.

14. **SHARING COINS** What is the greatest number of people with whom 30 nickels and 36 dimes can be shared so that each person gets the same share? _____
15. **DECK OF CARDS** A deck of cards has 52 cards. The deck can be divided into 4 piles of exactly 13 cards each. Describe all the other ways the deck can be divided into equal piles.

_____

_____

REVIEW: Divisibility Tests

Name _____

Key Concept and Vocabulary

A whole number is divisible by

- 2: if its last digit is 0, 2, 4, 6, or 8.
- 3: if the sum of the digits is divisible by 3.
- 4: if the number formed by the last two digits is divisible by 4.
- 5: if its last digit is 0 or 5.
- 6: if it is divisible by 2 and by 3.
- 9: if the sum of its digits is divisible by 9.

Skill Examples

1. 147 is divisible by 3 because $1 + 4 + 7 = 12$ is divisible by 3.
2. 524 is divisible by 4 because 24 is divisible by 4.
3. 243 is divisible by 9 because $2 + 4 + 3 = 9$ is divisible by 9.

Application Example

4. There are 9 students in your class. Can you divide 839 stamps evenly, so that each student in your class gets the same number of stamps?

   The sum of the digits of 839 is $8 + 3 + 9 = 20$. 20 is not divisible by 9.

   ∴ No, you cannot divide the stamps evenly.

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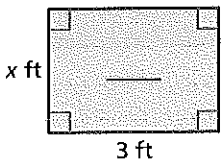
Check your answers at BigIdeasMath.com.

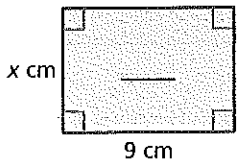
Use a divisibility test to answer the question.

5. Is 146 divisible by 2? _____
6. Is 153 divisible by 3? _____
7. Is 378 divisible by 4? _____
8. Is 1255 divisible by 5? _____
9. Is 147 divisible by 6? _____
10. Is 333 divisible by 6? _____
11. Is 2769 divisible by 3? _____
12. Is 5034 divisible by 3? _____
13. Is 145 divisible by 15? _____

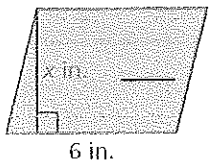
Decide whether x is a whole number. (Figures are not drawn to scale.)

14. 

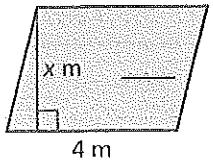
Area = 87 ft^2

15. 

Area = 343 cm^2

16. 

Area = 256 in.^{2}

17. 

Area = 144 m^2

18. **SHARING TIME** There are 360 minutes of monthly cell phone minutes for 4 people in a family. Can each person get the same number of minutes per month? If so, how many?

_____

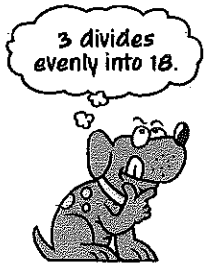
19. **CALENDAR** Assume that there are 365 days in a year. Describe the possible number of days in a week so that there is an exact number of weeks in a year. *(Hint: 7 is not one of them.)*

_____

Divisibility Tests

Name _____

Key Concept and Vocabulary



A number is divisible by

- **2:** if its last digit is 0, 2, 4, 6, or 8.
- **3:** if the sum of the digits is divisible by 3.
- **5:** if its last digit is 0 or 5.
- **10:** if its last digit is 0.

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Circle "Yes" or "No" in each box in the table.

	Number	Is the number divisible by 2?	Is the number divisible by 3?	Is the number divisible by 5?	Is the number divisible by 10?
1.	4	Yes No	Yes No	Yes No	Yes No
2.	5	Yes No	Yes No	Yes No	Yes No
3.	6	Yes No	Yes No	Yes No	Yes No
4.	7	Yes No	Yes No	Yes No	Yes No
5.	8	Yes No	Yes No	Yes No	Yes No
6.	9	Yes No	Yes No	Yes No	Yes No
7.	10	Yes No	Yes No	Yes No	Yes No
8.	11	Yes No	Yes No	Yes No	Yes No
9.	12	Yes No	Yes No	Yes No	Yes No

10. PATTERN Describe the pattern in this column.

_____
_____
_____
_____
_____

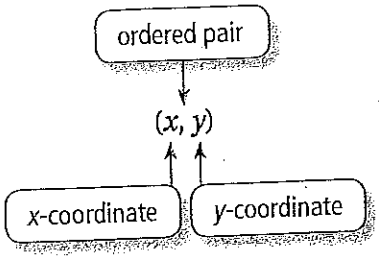
11. PATTERN Describe the pattern in this column.

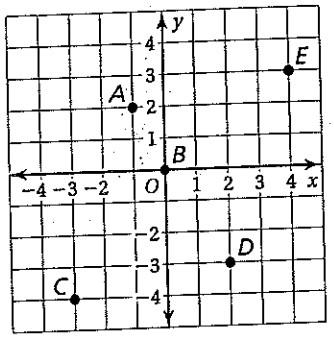
_____
_____
_____
_____
_____

REVIEW: Coordinate Plane

Name _____

Key Concept and Vocabulary





Skill Examples

1. $A(-1, 2)$ *(Quadrant II)*
2. $B(0, 0)$ *(origin)*
3. $C(-3, -4)$ *(Quadrant III)*
4. $D(2, -3)$ *(Quadrant IV)*
5. $E(4, 3)$ *(Quadrant I)*

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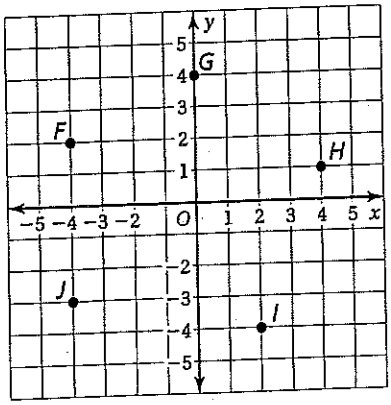
Check your answers at BigIdeasMath.com.

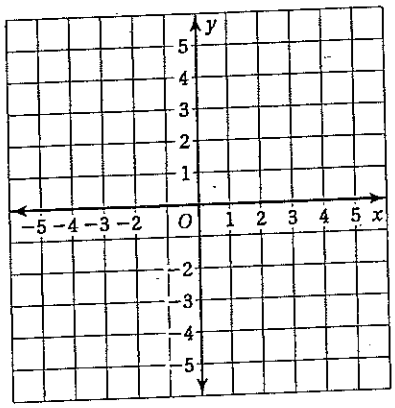
Write the ordered pair that represents the point in the coordinate plane.

6. F _____
7. G _____
8. H _____
9. I _____
10. J _____



Plot the ordered pair in the coordinate plane. Name the quadrant for the point.

11. $K(-3, 5)$ _____
12. $L(-3, 0)$ _____
13. $M(2, 5)$ _____
14. $N(4, -2)$ _____
15. $P(-2, -4)$ _____



REVIEW: Order of Operations

Name _____

Key Concept and Vocabulary

"Please Excuse My Dear Aunt Sally"

1st Parentheses
2nd Exponents
3rd Multiplication and Division (from left to right)
4th Addition and Subtraction (from left to right)

Simplify $4^2 \div 2 + 3(9 - 5)$.

$$\begin{aligned} 4^2 \div 2 + 3(9 - 5) &= 4^2 \div 2 + 3 \cdot 4 \\ &= 16 \div 2 + 3 \cdot 4 \\ &= 8 + 12 \\ &= 20 \end{aligned}$$

Skill Examples

1. $18 \div 2 - 4 = 9 - 4 = 5$
2. $12 \cdot (6 - 2) = 12 \cdot 4 = 48$
3. $14 \cdot 3 - 19 = 42 - 19 = 23$
4. $20 \div 10 + 21 \cdot 5 = 2 + 105 = 107$
5. $(2 + 3)^2 - 5 = 25 - 5 = 20$

Application Example

6. At a museum, 4 adults pay \$5 each and 6 children pay \$3 each. What is the total cost of the tickets?

$$\begin{aligned} 4 \cdot 5 + 6 \cdot 3 &= 20 + 18 \\ &= 38 \end{aligned}$$

∴ The total cost is \$38.

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Check your answers at BigIdeasMath.com.

Simplify.

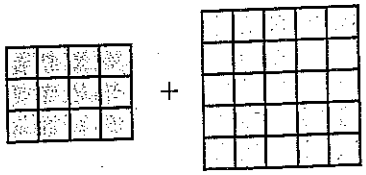
7. $3^2 + 5(4 - 2) =$ _____
8. $3 + 4 \div 2 =$ _____
9. $10 \div 5 \cdot 3 =$ _____
10. $4(3^3 - 8) \div 2 =$ _____
11. $3 \cdot 6 - 4 \div 2 =$ _____
12. $12 + 7 \cdot 3 - 24 =$ _____

Insert parentheses to make the statement true.

13. $5^2 - 15 \div 5 = 2$
14. $12 \cdot 2^3 + 4 = 144$
15. $91 - 21 \div 7 = 10$

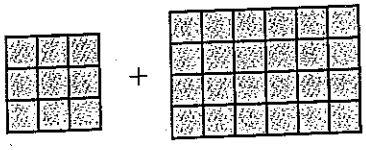
Write an expression for the total area of the two rectangles. Evaluate your expression.

16.



_____

17.



_____

18. **ADMISSION** At a baseball game, 6 adults pay \$20 each and 4 children pay \$10 each. What is the total cost of the tickets? _____

19. **INSERTING PARENTHESES** Insert parentheses in the expression $4 + 2^3 - 5 \cdot 2$ in two ways: (a) so that the value is 10 and (b) so that the value is 14.

(a) _____ (b) _____

REVIEW: Exponents

Name _____

Key Concept and Vocabulary

multiplication

exponent

$2 \cdot 2 \cdot 2 = 2^3$

base

4 to the first power

$4^1 = 4$

$4^2 = 4 \cdot 4$

4 squared

$4^3 = 4 \cdot 4 \cdot 4$

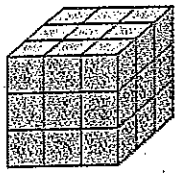
4 cubed

Skill Examples

1. $3^2 = 3 \cdot 3 = 9$
2. $2^4 = 2 \cdot 2 \cdot 2 \cdot 2 = 16$
3. $4^3 = 4 \cdot 4 \cdot 4 = 64$
4. $5^4 = 5 \cdot 5 \cdot 5 \cdot 5 = 625$
5. $9^5 = 9 \cdot 9 \cdot 9 \cdot 9 \cdot 9 = 59{,}049$

Application Example

6. How many small cubes are in the stack?



$3^3 = 3 \cdot 3 \cdot 3$

$= 27$

$\therefore$ 27 small cubes are in the stack.

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Check your answers at BigIdeasMath.com.

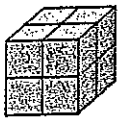
Find the value.

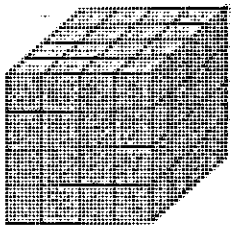
7. $3^4 =$ _____
8. $4^5 =$ _____
9. $12^3 =$ _____
10. $18^1 =$ _____
11. $5^6 =$ _____
12. $2^{10} =$ _____
13. $8^2 =$ _____
14. $7^3 =$ _____

Use an exponent to rewrite the expression.

15. $4 \cdot 4 \cdot 4 \cdot 4 =$ _____
16. $1 \cdot 1 \cdot 1 =$ _____
17. $5 \cdot 5 \cdot 5 =$ _____
18. $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 =$ _____

How many small cubes are in the stack?

19.  _____ _____ _____

20.  _____ _____ _____

21. **FLYING SAUCERS** You saw 5 flying saucers. Each flying saucer had 5 aliens. Each alien had 5 eyes. How many alien eyes were there altogether? Explain your reasoning.

_____