



Warm up Grade 6

Date: Sept. 27

Write in standard form:

a. two hundred thousand four hundred ten 200 410

b. 400 000 000 + 500 000 + 70 000 + 600 + 2

400 510 602

Write the multiples of 8 up to 40 THEN write the factors of 8

Multiples of 8 - 8, 16, 24, 32, 40

Factors of 8 - 1, 2, 4, 8

$$\begin{array}{r} 8 \\ \hline 1 \times 8 \\ 2 \times 4 \end{array}$$

Homework Solutions



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#1b, c, d, f, g, **h**

#3) Write the factors of 80 then write yes or no beside a - h

#5 HINT multiples of 12 may help to determine

~~#3a, b~~

~~#4~~

#12

#15

Practice

You may use Colour Tiles or counters to model your solutions.

1. List all the factors of each number.

- a) 6 b) 9 c) 25 d) 30 e) 12
 f) 50 g) 28 h) 98 i) 20 j) 63

- 1a) 6 : **1, 2, 3, 6** **1b) 9 : 1, 3, 9** 1c) 25 : 1, 5, 25 1d) 30 : 1, 2, 3, 5, 6, 10, 15, 30
 1 x 6 1 x 9 1 x 25 1 x 30 1 x 50
 2 x 3 3 x 3 5 x 5 2 x 15 2 x 25
 5 x 5 3 x 10 5 x 10
 5 x 6 1, 2, 5, 10, 25, 50

- 1g) 28 : 1, 2, 4, 7, 14, 28 1h) 98 : 1, 2, 7, 14, 98
 1 x 28 1 x 98
 2 x 14 2 x 46
 4 x 7 7 x 14

3) Factors of 80 are 1, 2, 4, 5, 8, 10, 16, 20, 40, 80

- 1 x 80
 2 x 40 a) 2 YES e) 6 NO
 4 x **20** b) 3 NO f) 8 Yes
 5 x 16 c) 4 YES g) 9 No
 8 x 10 d) 5 Yes h) 10 Yes

5) Multiples of 12: 12, 24, 36, 48, 60, 72, 84, 96, 108...

- a) 96 eggs can be packaged in 8 packages
 b) 56 eggs cannot be packaged in dozens
 c) 60 eggs can be packaged in 5 packages
 d) 74 eggs cannot be packaged in dozens

6. Write 3 numbers between 30 and 50 that have:

a) exactly 2 factors each

Any prime #

31, 37, 41, 43, 47



b) more than 2 factors each

32, 33, 34, 35, 36, 38, 39, 40, 42, 44, 45,
46, 48, 49



9. Between 20 and 28 students signed up for the chess club. The students could not be divided exactly into groups of 2, 3, 4, or 5. How many students signed up for the chess club? Show your work.



Since it cannot be in groups of two then we know it is odd # in the groups.

21 is divisible by 3 so not 21 (3x7)

25 is divisible by 5 so not 25 (5x5)

27 divisible by 3 so not 27 (3x9)

23 is not divisible by 2, 3, 4, or 5. It is prime

There is 23 people that signed up for chess.

12. How can you tell that 32 and 95 are not prime numbers

without finding their factors? 32 is even so it means it divides by 2 and 95 ends with a 5 so it is divisible by 5

15. Copy this Carroll diagram.

	Prime	Composite
Even	2	4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30
Odd	3, 5, 7, 11, 13 17, 19, 23, 29	9, 15, 21, 25, 27

Sort the numbers from 2 to 30.

LESSON

5

Investigating Factors

The factors of 6 are 1, 2, 3, and 6.

A number is *perfect* when all its factors, other than the number itself, add up to the number.

$$1 + 2 + 3 = 6$$

So, 6 is a perfect number.

not important

Common Factors

List the factors of any numbers separately then circle the factors they have in common.

(You must be good a multiplication.

Ask yourself does 1 divide into the #, Then does 2 divide in the #, if 3 divides in the 3 and so on)



Ex) Find the factors of 12 and 8

List factors of 12

$$\begin{array}{l} 1 \times 12 \\ 2 \times 6 \\ 3 \times 4 \end{array}$$

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

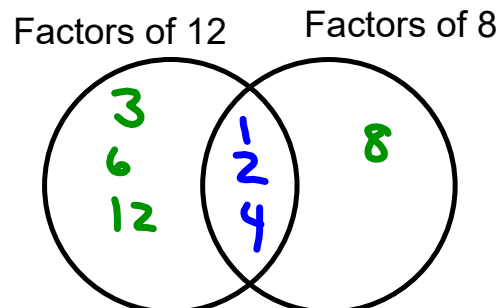
List the factors of 8

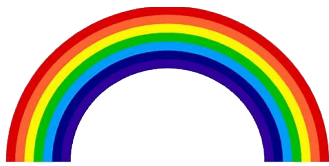
$$\begin{array}{l} 1 \times 8 \\ 2 \times 4 \end{array}$$

Factors of 8: 1, 2, 4, 8

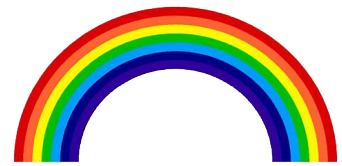
Common factors of 12 and 8 are: 1, 2, 4

You can display this in a Ven diagram





Rainbow Method



Every composite number can be written as a product of its factors

Ex) 48

$$\begin{array}{l} 1 \times 48 \\ 2 \times 24 \\ 3 \times 16 \\ 4 \times 12 \\ 6 \times 8 \end{array}$$

Factors of 48:

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

To find all the factors of a number, start with 1 (..and the number)

« Then decide if 2 is a factor, then 3, then 4 (..they all divide evenly into 48)

« Notice that 5 is not a factor (..it doesn't divide evenly into 48)

You can stop at 6. because the numbers now meet.

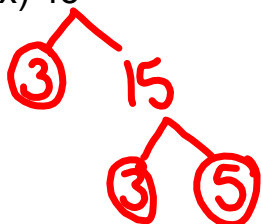
Prime Factorization: is finding all the prime factors that divide into a composite number

Must complete a factor tree

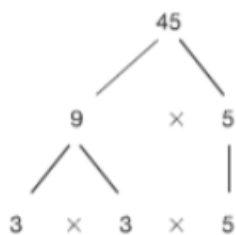
Remember prime # are: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, ...

1

Ex) 45



Ex) 45



Using factors you know first
BUT 9 is not prime so you
need to break it down further

Class/Homework

You can use a calculator to help
BUT you MUST show work



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#1

#2a,b, ●, ●

3b, ●

4, b, ●

5

Test
Thursday
Oct. 3

Practice



1. Use a Venn diagram. Show the factors of 18 and 24.
What are the common factors of 18 and 24?

2. Find the common factors of each pair of numbers.

a) 15, 25

b) 16, 40

c) 18, 42

d) 35, 60

3. Find all the factors of each number.

Record the factors as a "rainbow."

a) 48

b) 50

c) 78

d) 62



4. List all the factors of each number.

How do you know you have found all the factors?

Sort the factors into prime numbers and composite numbers.

What do you notice?

a) 34

b) 40

c) 72

d) 94

5. Draw a factor tree to find the factors of each number that are prime.
- a) 64 b) 85 c) 90 d) 76

6. Use division to find the factors of each number that are prime.

a) 18

b) 35

c) 36

d) 50

7. Use mental math to find the factors of each number that are prime.

a) 15

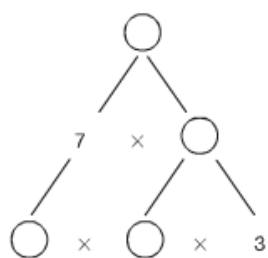
b) 6

c) 21

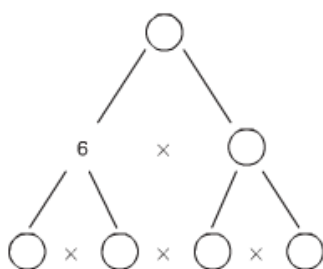
d) 33

8. Copy and complete each factor tree in as many different ways as you can.

a)



b)



9. Patan uses a bead loom to make a bracelet. She wants to use all 84 beads, and to put the beads in rows of equal length. Patan also wants the number of beads in each row to be a factor of 84 that is a prime number. How many beads could Patan put in each row? Give as many answers as you can. Explain how you found the numbers.



Read I nom

10. Julia and Sandhu bought packages of granola bars.
Each package has the same number of bars.
- a) Julia and Sandhu each had a total of 12 bars.
How many bars could there be in one package?
 - b) Suppose Julia had 24 bars and Sandhu had 18 bars.
How many bars could there be in one package?
Draw a picture to show your thinking.

11. Choose any 2-digit number.
Write clues to help a classmate guess your number.
One or more of your clues should be about factors.

12. a) Draw 2 different factor trees for each number.
i) 56 ii) 32 iii) 90 iv) 75
- b) Why is it possible to draw 2 different factor trees for each number in part a?
- c) Name 2 composite numbers for which you can draw only one factor tree.
Explain why this is so.
- d) How many factor trees can you draw for the number 67? Explain.

13. Is your age a perfect number?
If it is not, when will your age be a perfect number?

14. A number is *almost perfect* when all its factors, other than the number itself, add up to one less than the number.
There are two numbers between 5 and 20 that are almost perfect.
Find these numbers.