Math Antics
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Name: _____

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Factoring is "Un-Multiplying"

Instructions: Factor each number. (One factor has already been given, so you just need to find the missing factor.)

Factors

1 $24 = \underline{6} \times \underline{4}$

2 $15 = \underline{3} \times \underline{5}$

3 $10 = \underline{2} \times \underline{5}$

4 $24 = \underline{3} \times \underline{8}$

5 $25 = \underline{5} \times \underline{5}$

6 $20 = \underline{5} \times \underline{4}$

7 $30 = \underline{10} \times \underline{3}$

8 $49 = \underline{7} \times \underline{7}$

9 $21 = \underline{3} \times \underline{7}$

10 $18 = \underline{9} \times \underline{2}$

11 $45 = \underline{9} \times \underline{5}$

12 $48 = \underline{6} \times \underline{8}$

13 $36 = \underline{6} \times \underline{6}$

14 $77 = \underline{7} \times \underline{11}$

15 $18 = \underline{3} \times \underline{6}$

16 $81 = \underline{9} \times \underline{9}$

17 $32 = \underline{4} \times \underline{8}$

18 $100 = \underline{2} \times \underline{50}$

19 $64 = \underline{8} \times \underline{8}$

20 $250 = \underline{50} \times \underline{5}$

21 $14 = \underline{2} \times \underline{7}$

22 $144 = \underline{12} \times \underline{12}$

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Factoring: More Than One Answer

Instructions: List two different factor pairs that will multiply to give you the number shown.
(Do not use pairs that include the factor 1.)

1   20 = _4_ × _5_
     20 = _2_ × _10_

2   24 = _4_ × _6_
     24 = _3_ × _8_

3   18 = _3_ × _6_
     18 = _2_ × _9_

4   16 = _4_ × _4_
     16 = _2_ × _8_

5   30 = _5_ × _6_
     30 = _3_ × _10_
       or 2 x 15

6   40 = _5_ × _8_
     40 = _4_ × _10_
       or 2 x 20

7   28 = _4_ × _7_
     28 = _2_ × _14_

8   32 = _4_ × _8_
     32 = _2_ × _16_

9   45 = _5_ × _9_
     45 = _3_ × _15_

10   50 = _5_ × _10_
     50 = _2_ × _25_

11   36 = _6_ × _6_
     36 = _4_ × _9_
       or 3 x 12
       or 2 x 18

12   100 = _10_ × _10_
     100 = _4_ × _25_
       or 5 x 20
       or 2 x 50

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Finding Factors by Testing for Divisibility

Instructions: Test for divisibility by dividing the bigger number by the smaller number. If there is no remainder, then the smaller number you tested IS a factor of the bigger number. Mark the correct box.

Examples

Is 3 a factor of 15 ?

☒ Yes
☐ No

Is 7 a factor of 20 ?

☐ Yes
☒ No

scratch work

$$\begin{array}{r} 5 \text{ r}0 \\ 3\overline{)15} \\ -15 \\ \hline 0 \end{array}$$

no remainder, so
3 is a factor of 15

$$\begin{array}{r} 2 \text{ r}6 \\ 7\overline{)20} \\ -14 \\ \hline 6 \end{array}$$

remainder!
7 is NOT a factor of 20

1 Is 2 a factor of 18 ?

☒ Yes
☐ No

2 Is 4 a factor of 16 ?

☒ Yes
☐ No

3 Is 3 a factor of 25 ?

☐ Yes
☒ No

4 Is 8 a factor of 18 ?

☐ Yes
☒ No

5 Is 7 a factor of 14 ?

☒ Yes
☐ No

6 Is 6 a factor of 30 ?

☒ Yes
☐ No

7 Is 3 a factor of 19 ?

☐ Yes
☒ No

8 Is 3 a factor of 21 ?

☒ Yes
☐ No

9 Is 6 a factor of 20 ?

☐ Yes
☒ No

10 Is 6 a factor of 40 ?

☐ Yes
☒ No

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Using Divisibility Rules

Note: Testing for divisibility by dividing will always work, but sometimes it's not necessary. There are some rules about divisibility that you can sometimes use to quickly tell if a number is a factor of another number. This can be very helpful when you are testing larger numbers!

Divisibility Rules

1. **If the last digit is even, then the number is divisible by 2.**
2. **If the sum of a number's digits is divisible by 3, then the number is divisible by 3.**
3. **If the last digit is a 0 or a 5, then the number is divisible by 5.**
4. **If the last digit is a 0, then the number is divisible by 10.**

(There are other divisibility rules, but some are more work than just dividing with a calculator!)

Instructions: Use the divisibility rules to decide if the test number is a factor of the bigger number. Mark the correct box.

1 Is 2 a factor of 136 ?

☒ Yes
☐ No

2 Is 5 a factor of 182 ?

☐ Yes
☒ No

3 Is 2 a factor of 423 ?

☐ Yes
☒ No

4 Is 3 a factor of 141 ?

☒ Yes
☐ No

5 Is 5 a factor of 270 ?

☒ Yes
☐ No

6 Is 2 a factor of 712 ?

☒ Yes
☐ No

7 Is 3 a factor of 51 ?

☒ Yes
☐ No

8 Is 10 a factor of 330 ?

☒ Yes
☐ No

9 Is 3 a factor of 323 ?

☐ Yes
☒ No

10 Is 5 a factor of 995 ?

☒ Yes
☐ No

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Finding All the Factors of a Number

A-FAC 5

Instructions: List all the factors of the number shown by doing a divisibility test for each number that is less than or equal to half of the number you are finding factors of. Using a calculator for the divisibility tests is recommended. Remember that 1 and the number itself are always factors. (Hint: You can also use a multiplication table to help you find all the factors.)

1 10   factor list: 1 2 5 10

2 8   factor list: 1 2 4 8

3 12   factor list: 1 2 3 4 6 12

4 15   factor list: 1 3 5 15

5 16   factor list: 1 2 4 8 16

6 20   factor list: 1 2 4 5 10 20

7 21   factor list: 1 3 7 21

8 25   factor list: 1 5 25

9 30   factor list: 1 2 3 5 6 10 15 30