math Antics
Worksheets

Name: _____

Date: _____

Factoring is "Un-Multiplying"

A-FAC 1

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Name: _____

Date: _____

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 = ___ × ___
24 = ___ × ___

3 18 = ___ × ___
18 = ___ × ___

4 16 = ___ × ___
16 = ___ × ___

5 30 = ___ × ___
30 = ___ × ___

6 40 = ___ × ___
40 = ___ × ___

7 28 = ___ × ___
28 = ___ × ___

8 32 = ___ × ___
32 = ___ × ___

9 45 = ___ × ___
45 = ___ × ___

10 50 = ___ × ___
50 = ___ × ___

11 36 = ___ × ___
36 = ___ × ___

12 100 = ___ × ___
100 = ___ × ___

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Math Antics Worksheets

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

$$\begin{array}{r} 5\ r0 \\ 3\overline{)15} \\ -15 \\ \hline 0 \end{array}$$

no remainder, so
3 is a factor of 15

$$\begin{array}{r} 2\ r6 \\ 7\overline{)20} \\ -14 \\ \hline 6 \end{array}$$

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

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:** _____

3 12   **factor list:** _____

4 15   **factor list:** _____

5 16   **factor list:** _____

6 20   **factor list:** _____

7 21   **factor list:** _____

8 25   **factor list:** _____

9 30   **factor list:** _____

Factoring

1 Factor 16 in two different ways.

$$16 = \underline{\quad} \times \underline{\quad}$$
$$16 = \underline{\quad} \times \underline{\quad}$$

2 Factor 30 in two different ways.

$$30 = \underline{\quad} \times \underline{\quad}$$
$$30 = \underline{\quad} \times \underline{\quad}$$

3 Factor 40 in three different ways.

$$40 = \underline{\quad} \times \underline{\quad}$$
$$40 = \underline{\quad} \times \underline{\quad}$$
$$40 = \underline{\quad} \times \underline{\quad}$$

4 Is 7 a factor of 52 ?

☐ Yes
☐ No

5 Is 3 a factor of 42 ?

☐ Yes
☐ No

6 Is 9 a factor of 153 ?

☐ Yes
☐ No

7 Find ALL the factors of 16.

factor list: _____

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

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

Math Antics Worksheets

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 $20 = \underline{4} \times \underline{5}$
$20 = \underline{2} \times \underline{10}$

2 $24 = \underline{4} \times \underline{6}$
$24 = \underline{3} \times \underline{8}$

3 $18 = \underline{3} \times \underline{6}$
$18 = \underline{2} \times \underline{9}$

4 $16 = \underline{4} \times \underline{4}$
$16 = \underline{2} \times \underline{8}$

5 $30 = \underline{5} \times \underline{6}$
$30 = \underline{3} \times \underline{10}$
or 2 x 15

6 $40 = \underline{5} \times \underline{8}$
$40 = \underline{4} \times \underline{10}$
or 2 x 20

7 $28 = \underline{4} \times \underline{7}$
$28 = \underline{2} \times \underline{14}$

8 $32 = \underline{4} \times \underline{8}$
$32 = \underline{2} \times \underline{16}$

9 $45 = \underline{5} \times \underline{9}$
$45 = \underline{3} \times \underline{15}$

10 $50 = \underline{5} \times \underline{10}$
$50 = \underline{2} \times \underline{25}$

11 $36 = \underline{6} \times \underline{6}$
$36 = \underline{4} \times \underline{9}$
or 3 x 12
or 2 x 18

12 $100 = \underline{10} \times \underline{10}$
$100 = \underline{4} \times \underline{25}$
or 5 x 20
or 2 x 50

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Examples

Is 3 a factor of 15 ?

☒ Yes
☐ No

scratch work

$$3\overline{)15} \quad 5\ r0$$
$$\underline{-15}$$
$$0$$

no remainder, so 3 is a factor of 15

Is 7 a factor of 20 ?

☐ Yes
☒ No

$$7\overline{)20} \quad 2\ r6$$
$$\underline{-14}$$
$$6$$

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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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

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Factoring

1 Factor 16 in two different ways.

$$16 = \underline{\ 4\ } \times \underline{\ 4\ }$$
$$16 = \underline{\ 2\ } \times \underline{\ 8\ }$$

or 1 x 16

2 Factor 30 in two different ways.

$$30 = \underline{\ 5\ } \times \underline{\ 6\ }$$
$$30 = \underline{\ 3\ } \times \underline{\ 10\ }$$

or 2 x 15

or 1 x 30

3 Factor 40 in three different ways.

$$40 = \underline{\ 5\ } \times \underline{\ 8\ }$$
$$40 = \underline{\ 4\ } \times \underline{\ 10\ }$$
$$40 = \underline{\ 2\ } \times \underline{\ 20\ }$$

or 1 x 40

4 Is 7 a factor of 52 ?

☐ Yes
☒ No

$$\begin{array}{r} 7 \\ 7\overline{)52} \\ -49 \\ \hline 3 \end{array}$$ remainder

5 Is 3 a factor of 42 ?

☒ Yes
☐ No

$$\begin{array}{r} 14 \\ 3\overline{)42} \\ -3 \\ \hline 12 \\ -12 \\ \hline 0 \end{array}$$

no remainder

6 Is 9 a factor of 153 ?

☒ Yes
☐ No

153 ÷ 9 = 17   no remainder!

7 Find ALL the factors of 16.

factor list: 1 2 4 8 16

See Video for step-by-step
solutions to each problem.