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Name: _____

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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. $24 = 6 \times 4$
2. $15 = 3 \times \_\_\_$
3. $10 = 2 \times \_\_\_$
4. $24 = 3 \times \_\_\_$
5. $25 = 5 \times \_\_\_$
6. $20 = 5 \times \_\_\_$
7. $30 = 10 \times \_\_\_$
8. $49 = 7 \times \_\_\_$
9. $21 = 3 \times \_\_\_$
10. $18 = 9 \times \_\_\_$
11. $45 = 9 \times \_\_\_$
12. $48 = 6 \times \_\_\_$
13. $36 = 6 \times \_\_\_$
14. $77 = 7 \times \_\_\_$
15. $18 = 3 \times \_\_\_$
16. $81 = 9 \times \_\_\_$
17. $32 = 4 \times \_\_\_$
18. $100 = 2 \times \_\_\_$
19. $64 = 8 \times \_\_\_$
20. $250 = 50 \times \_\_\_$
21. $14 = 2 \times \_\_\_$
22. $144 = 12 \times \_\_\_$

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Factoring: More Than One Answer

A-FAC 2

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. $20 = 4 \times 5$
   $20 = 2 \times 10$

2. $24 = \_\_\_ \times \_\_\_$
   $24 = \_\_\_ \times \_\_\_$

3. $18 = \_\_\_ \times \_\_\_$
   $18 = \_\_\_ \times \_\_\_$

4. $16 = \_\_\_ \times \_\_\_$
   $16 = \_\_\_ \times \_\_\_$

5. $30 = \_\_\_ \times \_\_\_$
   $30 = \_\_\_ \times \_\_\_$

6. $40 = \_\_\_ \times \_\_\_$
   $40 = \_\_\_ \times \_\_\_$

7. $28 = \_\_\_ \times \_\_\_$
   $28 = \_\_\_ \times \_\_\_$

8. $32 = \_\_\_ \times \_\_\_$
   $32 = \_\_\_ \times \_\_\_$

9. $45 = \_\_\_ \times \_\_\_$
   $45 = \_\_\_ \times \_\_\_$

10. $50 = \_\_\_ \times \_\_\_$
    $50 = \_\_\_ \times \_\_\_$

11. $36 = \_\_\_ \times \_\_\_$
    $36 = \_\_\_ \times \_\_\_$

12. $100 = \_\_\_ \times \_\_\_$
    $100 = \_\_\_ \times \_\_\_$

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Finding Factors by Testing for Divisibility

A-FAC 3

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 ?

- [x] Yes
- [ ] No

scratch work

$15 \div 3 = 5 \text{ r}0$ (15 − 15 = 0)

no remainder, so 3 is a factor of 15

Is 7 a factor of 20 ?

- [ ] Yes
- [x] No

$20 \div 7 = 2 \text{ r}6$ (20 − 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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Using Divisibility Rules

A-FAC 4

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 ?

- [x] 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:**
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:**