

INTRO TO FACTORS PRACTICE SHEET - A

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HELPFUL EXAMPLE

MATHEMATICAL DEFINITION
A **FACTOR** IS A NUMBER THAT DIVIDES EXACTLY INTO A GIVEN NUMBER.

SIMPLE DEFINITION
THE WORD, **FACTOR**, IS ASKING, "WHAT CAN YOU DIVIDE THE NUMBER BY?"

LIST AT LEAST FOUR FACTORS FOR EACH NUMBER.

8
 $8 \div 2 = 4$
 $8 \div 4 = 2$
 $8 \div 8 = 1$
 $8 \div 1 = 8$
 SO, 2, 4, 8, AND 1 ARE ALL FACTORS OF 8.

20
 $20 \div 4 = 5$
 $20 \div 5 = 4$
 $20 \div 10 = 2$
 $20 \div 2 = 10$
 $20 \div 20 = 1$
 $20 \div 1 = 20$
 SO, 4, 5, 2, 10, 20, AND 1 ARE ALL FACTORS OF 20.

IMPORTANT NOTE
SEE HOW ALL THE ANSWERS ARE WHOLE NUMBERS.

LIST AT LEAST FOUR FACTORS FOR EACH NUMBER.

18
 $18 \div 1 = 18$
 $18 \div 18 = 1$
 $18 \div 2 = 9$
 $18 \div 9 = 2$
 $18 \div 3 = 6$
 $18 \div 6 = 3$

45
 $45 \div 3 = 15$
 $45 \div 15 = 3$
 $45 \div 5 = 9$
 $45 \div 9 = 5$
 $45 \div 1 = 45$
 $45 \div 45 = 1$

FACTORS OF 18: 1, 2, 3, 6, 9, 18

FACTORS OF 45: 1, 3, 5, 9, 15, 45

21 **30** **24**

FACTORS OF 21: 1, 3, 7, 21

FACTORS OF 30: 1, 2, 3, 5, 6, 10, 15, 30

FACTORS OF 24: 1, 2, 3, 4, 6, 8, 12, 24

32 **28** **16**

FACTORS OF 32: 1, 2, 4, 8, 16, 32

FACTORS OF 28: 1, 2, 4, 7, 14, 28

FACTORS OF 16: 1, 2, 4, 8, 16

12 **50** **48**

FACTORS OF 12: 1, 2, 3, 4, 6, 12

FACTORS OF 50: 1, 2, 5, 10, 25, 50

FACTORS OF 48: 1, 2, 4, 6, 8, 12, 24, 48

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HELPFUL EXAMPLE

FIND AT LEAST THREE COMMON FACTORS FOR 8 AND 20.

8
 $8 \div 1 = 8$
 $8 \div 2 = 4$
 $8 \div 4 = 2$
 $8 \div 8 = 1$

20
 $20 \div 1 = 20$
 $20 \div 2 = 10$
 $20 \div 4 = 5$
 $20 \div 5 = 4$
 $20 \div 10 = 2$
 $20 \div 20 = 1$

SIMPLE DEFINITION
THE WORD, **COMMON**, MEANS THE SAME.

FACTORS OF 8: 1, 2, 4, 8
 FACTORS OF 20: 1, 2, 4, 5, 10, 20
**** COMMON FACTORS: 1, 2, 4 ****

IMPORTANT NOTE
WHAT THIS TELLS US IS THAT BOTH 8 AND 20 CAN BE DIVIDED BY 1, 2, OR 4.

FIND AT LEAST THREE COMMON FACTORS FOR EACH SET OF NUMBERS.

20 **32**
 $20 \div 1 = 20$ $32 \div 1 = 32$
 $20 \div 20 = 1$ $32 \div 32 = 1$
 $20 \div 4 = 5$ $32 \div 4 = 8$
 $20 \div 5 = 4$ $32 \div 8 = 4$
 $20 \div 2 = 10$ $32 \div 2 = 16$
 $20 \div 10 = 2$ $32 \div 16 = 2$

1, 2, 4 ARE COMMON FACTORS OF 20 AND 32

9 **27**
 $9 \div 1 = 9$ $27 \div 1 = 27$
 $9 \div 9 = 1$ $27 \div 27 = 1$
 $9 \div 3 = 3$ $27 \div 3 = 9$
 $27 \div 9 = 3$

1, 3, 9 ARE COMMON FACTORS OF 9 AND 27

24 **8**
1, 2, 4, 8 ARE COMMON FACTORS OF 24 AND 8

15 **45**
1, 3, 5, 15 ARE COMMON FACTORS OF 15 AND 45

56 **16**
1, 2, 4, 8 ARE COMMON FACTORS OF 56 AND 16

42 **28**
1, 2, 7, 14 ARE COMMON FACTORS OF 42 AND 28

40 **60**
1, 2, 4, 5, 10, 20 ARE COMMON FACTORS OF 40 AND 60

14 **56**
1, 2, 7, 14 ARE COMMON FACTORS OF 14 AND 56

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LET'S MAKE THIS A LITTLE EASIER!

RULE FOR #2
YOU CAN DIVIDE ANY EVEN NUMBER BY 2.
SO, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, AND SO ON CAN BE DIVIDED BY 2.

RULE FOR #3
IF YOU ADD THE DIGITS OF A NUMBER AND CAN DIVIDE IT BY 3 THEN YOU CAN DIVIDE THE ACTUAL NUMBER BY 3.
EXAMPLE: $114 = 1 + 1 + 4 = 6$. SINCE YOU CAN DIVIDE 6 BY 3, YOU CAN DIVIDE 114 BY 3.

RULE FOR #5
ANY NUMBER ENDING IN A 0 OR 5 CAN BE DIVIDED BY 5.
SO, 5, 10, 15, 20, 25, 30, 35, 40, 50, AND SO ON CAN BE DIVIDED BY 5.

!! THESE RULES WORK FOR ANY WHOLE NUMBER !!

CAN THESE NUMBERS BE DIVIDED BY 2, 3, OR 5?

30
 $2 \rightarrow 30$ ENDS IN A 0, SO YOU KNOW IT'S EVEN. $\rightarrow 30 \div 2 = 15$
 $3 \rightarrow$ IF YOU ADD 30'S DIGITS, $3 + 0 = 3$. YOU CAN DIVIDE 3 BY 3. $\rightarrow 30 \div 3 = 10$
 $5 \rightarrow 30$ ENDS IN A 0. $\rightarrow 30 \div 5 = 6$

2, 3, AND 5 ARE FACTORS OF 30.

64
 $2 \rightarrow 64$ ENDS IN A 4, SO YOU KNOW IT'S EVEN. $\rightarrow 64 \div 2 = 32$
 $3 \rightarrow$ ADD 64'S DIGITS, $6 + 4 = 10$. YOU CAN'T DIVIDE 10 BY 3. \rightarrow NO
 $5 \rightarrow 64$ ENDS IN A 4, NOT A 0 OR 5. \rightarrow NO

2 IS A FACTOR OF 64.

75 **43**
3, 5 ARE FACTORS OF 75. NONE ARE FACTORS OF 43.

90 **57**
2, 3, 5 ARE FACTORS OF 90. 3 IS A FACTOR OF 57.

132 **600**
2, 3 ARE FACTORS OF 132. 2, 3, 5 ARE FACTORS OF 600.

354 **255**
2, 3 ARE FACTORS OF 354. 3, 5 ARE FACTORS OF 255.

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HELPFUL EXAMPLE
FIND THE GREATEST COMMON FACTOR OF 8 AND 20.

8
 $8 \div 1 = 8$
 $8 \div 2 = 4$
 $8 \div 4 = 2$
 $8 \div 8 = 1$

20
 $20 \div 1 = 20$
 $20 \div 2 = 10$
 $20 \div 4 = 5$
 $20 \div 5 = 4$
 $20 \div 10 = 2$
 $20 \div 20 = 1$

SIMPLE DEFINITION
THE WORD, **GREATEST COMMON FACTOR**, MEANS THE LARGEST FACTOR THEY HAVE THE SAME.

FACTORS OF 8: 1, 2, 4, 8
 FACTORS OF 20: 1, 2, 4, 5, 10, 20
**** 4 IS THE LARGEST ONE THEY HAVE THE SAME ****

IMPORTANT NOTE
GREATEST COMMON FACTOR IS ALSO CALLED, GCF.
SO, 4 IS THE GREATEST COMMON FACTOR OF 8 AND 20.

FIND THE GREATEST COMMON FACTOR FOR EACH SET OF NUMBERS.

10 **12**
10 IS THE GCF OF 10 AND 20. 4 IS THE GCF OF 12 AND 28.

56 **36**
8 IS THE GCF OF 56 AND 16. 12 IS THE GCF OF 36 AND 24.

30 **20**
45 IS THE GCF OF 30 AND 45. 8 IS THE GCF OF 20 AND 8.

32 **28**
14 IS THE GCF OF 32 AND 14. 42 IS THE GCF OF 28 AND 42.

44 **54**
66 IS THE GCF OF 44 AND 66. 27 IS THE GCF OF 54 AND 27.