Merit Tutoring

WORKSHEET 05

Factors & Factor Rainbows

Year 5 Mathematics — Number & Money Strand

Australian Curriculum v9.0 — AC9M5N02

Name: _____ **Date:** _____

KEY CONCEPT: A **factor** is a whole number that divides exactly into another number with no remainder. For example, the factors of 12 are: 1, 2, 3, 4, 6, and 12.

Section 1: Fluency - Finding Factors

Question 1: List all the factors of 20.

Answer: _____

Question 2: List all the factors of 30.

Answer: _____

Question 3: Is 7 a factor of 48? Explain why or why not.

Answer: _____

Question 4: List all the factors of 36.

Answer: _____

Question 5: Which of the following are factors of 24? Circle them: 3, 5, 6,

7, 8, 9

Answer: _____

Question 6: List all the factors of 18.

Answer: _____

Question 7: True or False: 4 is a factor of 50.

Answer: _____

Question 8: How many factors does the number 16 have?

Answer: _____

Factor Fox Says:

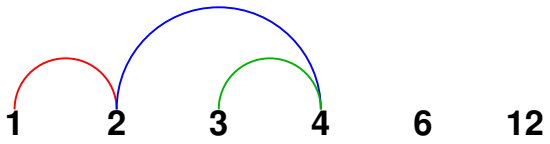
"You're a Fantastic Factor Finder!"

Joke Time: What do you call a number that can't sit still? A roamin' numeral!

Section 2: Reasoning - Factor Rainbows

KEY CONCEPT: A **factor rainbow** shows how factors come in pairs. The pairs multiply together to make the original number.

Example: Factor Rainbow for 12



The pairs are: $1 \times 12 = 12$, $2 \times 6 = 12$, $3 \times 4 = 12$

Question 9: Complete the factor rainbow for the number 24 by filling in the missing factors:

1 - 3 - 6 - 24

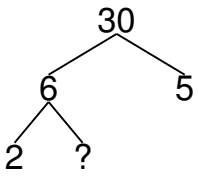
Answer: _____

Question 10: Draw a factor rainbow for the number 16. First, list all factors: _____

Question 11: The factor pairs of 28 are incomplete. Fill in the blanks:
$1 \times \_\_\_\_ = 28$ $2 \times \_\_\_\_ = 28$ $4 \times \_\_\_\_ = 28$

Answer: _____

Question 12: Complete this factor tree for 30:



Answer: The missing number is _____

Question 13: How many factor pairs does the number 20 have?

Answer: _____

Question 14: Which number has exactly three factors: 9, 12, or 16?

Answer: _____

Rainbow Butterfly Says:

"You're a Factor Rainbow Champion!"

Joke Time: Why did the two 4's skip lunch?
Because they already 8!

Section 3: Challenge - Common Factors

KEY CONCEPT: A **common factor** is a number that is a factor of two or more numbers. The **highest common factor (HCF)** is the largest factor that two numbers share.

Question 15: List all the factors of 12: _____
List all the factors of 18: _____
What factors do they have in common? _____
What is the highest common factor (HCF) of 12 and 18?

Answer: _____

Question 16: Find the highest common factor (HCF) of 24 and 36.

Answer: _____

Question 17: What is the highest common factor of 15 and 25?

Answer: _____

Question 18: List three common factors of 20 and 30.

Answer: _____

Question 19: A teacher has 16 pencils and 24 erasers. She wants to make identical packs with no items left over. What is the largest number of packs she can make?

Answer: _____

Question 20: Two numbers have a highest common factor of 7. One number is 14. What could the other number be? Give two possible answers.

Answer: _____

Question 21: Find the HCF of 8, 12, and 16.

Answer: _____

Question 22: True or False: Every pair of numbers has at least one common factor.

Answer: _____

Detective Owl Says:

"You're a Common Factor Detective!"

Joke Time: What did the calculator say to the student? You can count on me!

Excellent work! Check your answers on the next page.

WORKSHEET 05
ANSWER KEY

Section 1: Fluency - Finding Factors

1. 1, 2, 4, 5, 10, 20
2. 1, 2, 3, 5, 6, 10, 15, 30
3. No, because

$$48 \div 7 = 6$$

remainder

$$6$$

(or

$$6.857...$$

). A factor must divide evenly with no remainder.
4. 1, 2, 3, 4, 6, 9, 12, 18, 36
5. 3, 6, 8 (These are the factors of 24 from the list)
6. 1, 2, 3, 6, 9, 18
7. False (

$$50 \div 4 = 12.5$$

, not a whole number)
8. 5 factors (1, 2, 4, 8, 16)

Section 2: Reasoning - Factor Rainbows

9. The missing factors are: 2, 4, 8, 12 (Complete list: 1, 2, 3, 4, 6, 8, 12, 24)
10. Factors of 16: 1, 2, 4, 8, 16 (Factor pairs:

$$1 \times 16$$

,

$$2 \times 8$$

,

$$4 \times 4$$

)
11.

$$1 \times 28 = 28$$

,

$$2 \times 14 = 28$$

,

$$4 \times 7 = 28$$

12. The missing number is 3 (Because

$$6 = 2 \times 3$$

)
13. 3 factor pairs (

$$1 \times 20$$

,

$$2 \times 10$$

,

$$4 \times 5$$

)
14. 9 (Factors of 9: 1, 3, 9 — exactly three factors)

Section 3: Challenge - Common Factors

15. Factors of 12: 1, 2, 3, 4, 6, 12
Factors of 18: 1, 2, 3, 6, 9, 18
Common factors: 1, 2, 3, 6
HCF = 6
16. HCF of 24 and 36 is 12
17. HCF of 15 and 25 is 5
18. 1, 2, 5, 10 (Any three of these)
19. 8 packs (HCF of 16 and 24 is 8)
20. Possible answers: 7, 21, 28, 35, 42, 49, etc. (Any multiple of 7)
21. HCF of 8, 12, and 16 is 4
22. True (Every pair of whole numbers has at least 1 as a common factor)

WORKSHEET 06

Multiples & Divisibility

Year 5 Mathematics — Number & Money Strand

Australian Curriculum v9.0 — AC9M5N02

Name: _____ **Date:** _____

KEY CONCEPT: A **multiple** is the result of multiplying a number by any whole number. For example, multiples of 3 are: 3, 6, 9, 12, 15, 18... (we get these by ”skip counting”).

Section 1: Fluency - Skip Counting Multiples

Question 1: List the first five multiples of 8.

Answer: _____

Question 2: List the first six multiples of 7.

Answer: _____

Question 3: Which of these are multiples of 6? Circle them: 12, 15, 18, 24, 32, 60

Answer: _____

Question 4: Is 45 a multiple of 9? Explain.

Answer: _____

Question 5: Write the 10th multiple of 4.

Answer: _____

Question 6: Complete the pattern: 5, 10, 15, ____, ____, ____

Answer: _____

Question 7: Shade all the multiples of 3 in the grid below:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Question 8: True or False: Every multiple of 6 is also a multiple of 3.

Answer: _____

Multiple Monkey Says:

"You're a Magnificent Multiple Master!"

Joke Time: Why did the student eat their homework?
Because the teacher said it was a piece of cake!

Section 2: Reasoning - Divisibility Rules

KEY CONCEPTS - Divisibility Rules:

- **Divisible by 2:** The number ends in 0, 2, 4, 6, or 8 (even numbers)

- **Divisible by 5:** The number ends in 0 or 5
- **Divisible by 10:** The number ends in 0

Question 9: A number ends in 0. Is it divisible by 5? Is it divisible by 10?

Answer: _____

Question 10: Circle the numbers that are divisible by 2: 45, 78, 102, 333, 500

Answer: _____

Question 11: Which of these numbers are divisible by 5? Tick them: 125, 134, 200, 357, 445

Answer: _____

Question 12: Is 1,280 divisible by 2, 5, and 10? Explain your reasoning.

Answer: _____

Question 13: A number is divisible by 10. What digit must be in the ones place?

Answer: _____

Question 14: Create a 3-digit number that is divisible by both 2 and 5.

Answer: _____

Question 15: True or False: All numbers divisible by 10 are also divisible by 5.

Answer: _____

Division Dragon Says:

"You're a Divisibility Rule Champion!"

Joke Time: Why is 6 afraid of 7?
Because 7 8 9!

Section 3: Challenge - Problem Solving

Question 16: I am a multiple of 7. I am greater than 20 but less than 30. What number am I?

Answer: _____

Question 17: What is the smallest number that is a multiple of both 4 and 6?

Answer: _____

Question 18: List all the multiples of 8 that are less than 50.

Answer: _____

Question 19: A number is both a multiple of 3 and a multiple of 5. It is less than 40. What could the number be? List all possibilities.

Answer: _____

Question 20: Emma skip counts by 6 and stops at 48. How many numbers did she say?

Answer: _____

Question 21: A baker arranges cookies in rows of 9. If he has 81 cookies, how many complete rows can he make?

Answer: _____

Question 22: Find three numbers that are multiples of both 2 and 3.

Answer: _____

Question 23: A number leaves a remainder of 0 when divided by 5 and by 10. What is the smallest such number greater than 10?

Answer: _____

Question 24: True or False: If a number is a multiple of 12, it must also be a multiple of 4.

Answer: _____

Problem Solver Bot Says:

"You're a Problem-Solving Superstar!"

Joke Time: What do you call friends who love maths? Algebros!

Outstanding effort! Check your answers on the next page.

WORKSHEET 06
ANSWER KEY

Section 1: Fluency - Skip Counting Multiples

1. 8, 16, 24, 32, 40
2. 7, 14, 21, 28, 35, 42
3. 12, 18, 24, 60 (These are multiples of 6)
4. Yes, because

$$45 \div 9 = 5$$

(or

$$9 \times 5 = 45$$

)
5. 40 (

$$4 \times 10 = 40$$

)
6. 20, 25, 30 (These are multiples of 5)
7. Students should shade: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48
8. True (Because 6 = 2 × 3, every multiple of 6 contains 3 as a factor)

Section 2: Reasoning - Divisibility Rules

9. Yes to both. Any number ending in 0 is divisible by both 5 and 10.
10. 78, 102, 500 (These are the even numbers)
11. 125, 200, 445 (These end in 0 or 5)
12. Yes, 1,280 is divisible by all three. It ends in 0, which means it's divisible by 2 (even), by 5 (ends in 0), and by 10 (ends in 0).
13. 0 (zero)
14. Any number ending in 0 works (e.g., 120, 230, 340, 450, etc.). Numbers divisible by both 2 and 5 must end in 0.
15. True (All numbers ending in 0 are divisible by both 10 and 5)

Section 3: Challenge - Problem Solving

16. 21 or 28 (Both are multiples of 7 between 20 and 30)
17. 12 (This is the Lowest Common Multiple or LCM of 4 and 6)
18. 8, 16, 24, 32, 40, 48

19. 15, 30 (Numbers that are multiples of both 3 and 5 are multiples of 15)
20. 8 numbers (6, 12, 18, 24, 30, 36, 42, 48)
21. 9 rows (

$$81 \div 9 = 9$$

)
22. 6, 12, 18, 24, 30, 36, etc. (Any three multiples of 6 — numbers that are multiples of both 2 and 3)
23. 20 (Numbers divisible by both 5 and 10 must be multiples of 10)
24. True (Since 12 = 4 × 3, every multiple of 12 contains 4 as a factor)

Fantastic Work!

You've mastered Factors & Multiples!
Keep up the brilliant effort in Year 5 Maths!

