

1 pt

1. List all of the factors of the number.

21: 1, 3, 7, 21

1 pt

2. Select the numbers that have a factor of 6. Mark all that apply.

12

6

3

48

42

31

5 pts possible

3. Marissa was decorating her room. She arranged 63 picture tiles on a wall in the shape of a rectangle. For 3a-3e, choose Yes or No to tell whether a possible arrangement of the picture tiles is shown.

3a. 7 rows of 9 tiles

Yes

No

3b. 22 rows of 6 tiles

Yes

No

3c. 21 rows of 3 tiles

Yes

No

3d. 63 rows of 1 tiles

Yes

No

3e. 32 rows of 2 tiles

Yes

No

1 point for each correct response

4 pts possible

4. List all the factor pairs in the table.

Factors of 54	
<u>1</u> × <u>54</u> = <u>54</u>	<u>1</u> , <u>54</u>
<u>2</u> × <u>27</u> = <u>54</u>	<u>2</u> , <u>27</u>
<u>3</u> × <u>18</u> = <u>54</u>	<u>3</u> , <u>18</u>
<u>6</u> × <u>9</u> = <u>54</u>	<u>6</u> , <u>9</u>

1 point for each row with all numbers correctly entered

GO ON 

1pt

5. Classify the numbers. Some numbers may belong in more than one box.

45 48 81 84 99

Divisible by 3 and 9	Divisible by 5 and 9	Divisible by 2 and 6
45, 81, 99	45	48, 84

1pt

6. Josh works in a balloon store. He will put 45 balloons into bunches. He must use the same number of balloons in each bunch. The number of balloons in each bunch must be greater than 1 and less than 10. How many balloons could be in each bunch?

3, 5, or 9 balloons

must have all 3 numbers listed

1pt

7. Miles has a train collection with 36 engines, 72 boxcars, and 18 cabooses. He wants to arrange the train cars in equal rows with only one type of train car in each row. How many can he put in each row? Mark all that apply.

A 12    6    C 4    3    2    1

2pts possible

8. The library is designing a book display with 20 fiction books, 28 biographies, and 40 non-fiction books. Each shelf will have only one type of book on it. Sheena says she can put 5 books on each shelf. She listed the common factors of 20, 28, and 40 below to support her reasoning.

20: 1, 2, 3, 4, 5, 7, 20

28: 1, 2, 4, 5, 14, 28

40: 1, 2, 4, 5, 8, 10, 20, 40

Is she correct? Explain your answer. If her reasoning is incorrect, explain how she should have found the answer.

1pt for correct explanation

1 point for correct method to find the answer

**No; Possible explanation: Her list of factors for 20 and 28 are not correct. 3 and 7 are not factors of 20, but 10 is. 5 is not a factor of 28, but 7 is. Since the common factors of 20, 28, and 40 are 1, 2, and 4, she can only put 1, 2, or 4 books on each shelf.**



9. The number of books featured at the local library is shown in the table.

Books	
Type of Book	Number of Books
mystery	32
novel	16
non-fiction	12

3 pts possible

**Part A**

The local library is hosting a book fair in August that features the mystery books. All authors discuss the same number of mystery books and each will discuss more than 1 mystery book. How many authors could be featured in the show?

1 pt

**2, 4, 8, or 16 authors**

**Part B**

The library wants to display all the books on shelves in rows. Each row has the same number of books and the same type of books. How many books could be in each row? Explain how you found your answer.

**1 or 4 books in each row; possible explanation: I listed the factors of 32, 16, and 12 and then I identified the a common factors of 32, 16, and 12. The only common factors are 1 and 4.**

2 pts possible:  
1 pt for correct response  
1 pt for correct explanation

10. Beverly was skip counting while jumping rope. She started to count by 9s. She said 9, 18, 27, 36, 45, and 54. What number will she say next?

1 pt

**63**

11. Jose wrote the number 36. If his rule is *add 6*, what is the fourth number in Jose's pattern? How can you check your answer?

**54; Possible answer: Start with 54 and subtract 6 three times to get 36; 54, 48, 42, 36.**

2 pts possible

1 pt for correct answer (54)  
1 point for correct explanation



5 pts possible

12. For numbers 12a–12e, select True or False for each statement.

- 12a. The number 45 is a multiple of 9.       True       False
- 12b. The number 6 is a multiple of 12.       True       False
- 12c. The number 56 is a multiple of 8.       True       False
- 12d. The number 4 is a factor of 8.       True       False
- 12e. The number 36 is a factor of 9.       True       False

1 point for each correct response

13. What multiple of 9 is also a factor of 9?

1 pt

9

14. Marta uses 1 piece of paper and 1 piece of ribbon to make kites. The paper comes in packs of 3 pieces and the ribbon comes in packs of 4 pieces. What is the least number of kites Marta can make without any supplies left over?

1 pt

12 kites

15. A store in Roger’s neighborhood sells boxes of pencils that have 6 pencils in each box. Roger bought several boxes of pencils at the store. Which could be the number of pencils he bought? Mark all that apply.

1 pt

- A 9     
 B 18     
 C 20     
 D 24     
 E 34     
 F 42

16. Choose the words that make the sentence true.

1 pt

The number 12 is prime  
composite because it has exactly  
more than two factors.



*3pts possible*

17. Gus wrote the following riddle: I am a number between 30 and 60. My ones digit is three less than my tens digit. I am a prime number.

**Part A** *- 2pts*

What number does Gus' riddle describe? Explain.

**41** Possible explanation: The digit in the tens place must be 3, 4, 5, or 6. So, the number must be 30, 41, 52, or 63. Since 30 and 52 are even, they are divisible by 2. So, 30 and 52 are not prime. Since  $63 > 60$ , 63 cannot be the number. Since the only factors of 41 are 1 and 41, it is prime.

*1 pt for correct response  
1 point for correct explanation*

**Part B** *1pt*

Gus' friend Russ guessed that his riddle was about the number 47. Why can't 47 be the answer to Gus' riddle? Explain.

**Possible explanation:** Although 47 is prime and between 30 and 60, the ones digit is three more than the tens digit. The ones digit should be three less than the tens digit.

18. Classify the numbers as prime or composite.

*1pt*

31	42	89	93
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Prime	Composite
31, 89	42, 93

19. Aidan makes 12 bracelets on Monday. He makes 8 more bracelets each day from Tuesday through Thursday. How many bracelets does Aidan make on Friday?

*1pt*

\_\_\_\_\_ **44** \_\_\_\_\_ bracelets

20. Use the rule to write the first five terms of the pattern.

Rule: Add 8, subtract 4                      First term: 13

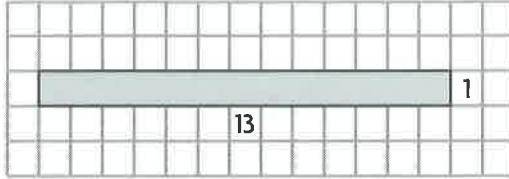
*1pt*

\_\_\_\_\_ **13, 21, 17, 25, 21** \_\_\_\_\_



3 pts possible

21. Eric had 13 tiles to arrange in a rectangular design for the top of a box. He drew a model of the rectangles he could make with the 13 tiles.



Part A - 1 pt

How does Eric's drawing show that 13 is a prime number?

**Possible explanation: Since there is only one possible rectangle that can be drawn with 13 tiles this means the only factors of 13 are 1 and itself. This makes 13 a prime number.**

Part B - 1 pt

Suppose Eric used 12 tiles to make the rectangular design. How many different rectangles could he make with the 12 tiles? Write a list or draw a picture to show the number and dimensions of the rectangles he could make.

**3; 1 tile by 12 tiles, 2 tiles by 6 tiles, and 3 tiles by 4 tiles**

Part C - 1 pt

Eric's friend Dawn said that she could make a larger number of different designs with 15 tiles than with Eric's 13 tiles. Do you agree with Dawn? Explain.

**Yes; Possible explanation: The number 15 is composite, so there is more than one factor pair. This means that more rectangles can be made.**

