

One-half point per answer

Label each as A (always true), S (sometimes true), or N (never true).

1. If 49 is divisible by 7, then 7 is a factor of 49.
2. An odd number multiplied by an odd number is odd.
3. An even number divided by an even number is even.
4. The number 123,456 is divisible by 8.
5. If a divides 4 and a divides 6, then a divides 24.
6. If a divides d , then a^2 divides d .
7. The sum of three consecutive numbers is divisible by 3.
8. The product of any three consecutive integers is divisible by 6.
9. The product of any four consecutive numbers is divisible by 24.
10. If a number is divisible by 3, then every digit of that number is divisible by 3.

One point per problem

11. If m is divisible by 21, list all other positive integers m must be divisible by.
12. The sum of two numbers is 45 and their difference is 15. Find the two numbers.
13. The sum of two numbers is 61, and when the digits in each of the numbers are reversed, their sum is 115. If their difference is 3, then find the two numbers.
14. If 467, _ _ 2 is divisible by 144, then what two digits go in the blanks.
15. If you have a bunch of \$0.06 and \$0.05 stamps and a package for which postage is \$1.93, and your total number of stamps is 33, then how many stamps of each kind will you need to mail the package?

Two points per problem

16. For 6 consecutive years, Joan's age was divisible by her granddaughter's age. The first year the sum of their ages was 62. The last year, Joan was 11 times older than her granddaughter was. What were their ages the third year?
17. What is the units digit of 3^{900} ?
18. The greatest common factor of 66 and x is 11. The least common multiple of 66 and x is 858. Find x .
19. Ann and Bob are cycling on a track. Ann completes one lap every 12 seconds, and Bob completes one lap every 15 seconds. If Ann and Bob started at the same time, by which lap will Ann be one lap ahead of Bob?

- 20.
- | | | | | | | | | | | | | |
|--|---|---|---|---|---|----|---|----|---|---|--|---|
| | | | | 1 | | | | | | | | |
| | | | | 1 | | 1 | | | | | | |
| | | | 1 | | 2 | | 1 | | | | | |
| | | 1 | | 3 | | 3 | | 1 | | | | |
| | 1 | | 4 | | 6 | | 4 | | 1 | | | |
| | | 1 | | 5 | | 10 | | 10 | | 5 | | 1 |

Following this same pattern, what would the next row look like?

School Name _____

JR. HIGH MATH LEAGUE

Number Theory

**GROUP 8-I TEST A
Spring 2001**

ANSWER SHEET

One-half point per answer

- | | |
|----------|-----------|
| 1. _____ | 2. _____ |
| 3. _____ | 4. _____ |
| 5. _____ | 6. _____ |
| 7. _____ | 8. _____ |
| 9. _____ | 10. _____ |

One point per problem

11. _____, _____, _____
12. _____, _____
13. _____, _____
14. 467, _____ 2
15. _____ 6 cent stamps
_____ 5 cent stamps

Two points per problem

16. Joan's age _____
granddaughter's age _____
17. _____
18. $x =$ _____
19. At the end of Ann's _____ lap
20. _____