

Name _____

Date _____

1. Simplify: $5 \cdot 11^2 - 3(2^4 - 4 \div 2 \cdot 3)$

2. Simplify: $-6 - 3(12 - 2^3) \div 4$

3. Simplify: $\frac{65 + 15(4) - 6}{10 + 15 + 3 + 2}$

4. Simplify: $7 + 3^2 \cdot 4 - 2(14 - 8 \div 2)$

5. Insert the fewest number of grouping symbols to make the following equation true:

$$24 \div 3 + 9 \times 5 - 2 = 6$$

6. Place addition or subtraction or multiplication signs between the digits, to make a problem with an answer of 100. Do not change the order of the digits.

9 8 7 6 5 4 3 2 1

7. What is the maximum value that can be attained from the following expression when grouping symbols are added?

$$4 + 5 \times 8 + 4 - 2 \times 3$$

8. Simplify: $\frac{\frac{1}{2} \times 1024}{0.125 \times 2^{12}}$.

9. An ordered pair of digits (a, b) is such that $\underline{4a5, b32}$ is a multiple of 66. Find $a + b$.

10. Find distinct digits A and B such that $\underline{A47B}$ is as large as possible and divisible by 36. Name the number.

11. What is the smallest positive integer exactly divisible by 2, 3, 4, 5, 6 and 7?

12. The six-digit number $3730n5$, with tens digit n , is divisible by 21. What is the value of the digit n ?

13. The five-digit number $\underline{31d26}$ is divisible by 3. Find the sum of all possible values of d .

14. Given that 3^n divides $15!$, what is the greatest possible integral value of n ?
15. How many positive integers less than 400 are divisible by both 7 and 11?
16. For what digit a in the hundreds position will the six-digit number 907a32 be divisible by 33?
17. How many three-digit numbers, with three different digits, are divisible by eleven?
18. What is the value of a in the following equation?

$$720 = 2^a \cdot 5 \cdot 3^2$$

19. The prime factorization of a certain number is $2^2 \cdot 3^2 \cdot 5$. How many of its positive integral factors are perfect squares?
20. How many positive integral factors does $2^8 \cdot 3^4 \cdot 7^6 \cdot 11$ have?
21. Find the sum of all the positive integral factors of 32.
22. What is the largest prime factor of 6402?
23. Find the sum of the prime factors of 1122.

24. The number 596,505 can be expressed as a product $n \cdot m \cdot p$, where each of n , m , and p are two-digit numbers. Find $n + m + p$.
25. How many of the positive integer factors of 432 are perfect squares?
26. Determine the product of all positive integer factors of 18.
27. What is the sum of the prime numbers between 30 and 70?
28. How many factors of 21,600 are perfect squares?

Answer List

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|----------|---|---|
| 1. 575 | 2. -9 | 3. $\frac{119}{30}$ |
| 4. 23 | 5. $24 \div (3 + 9) \times (5 - 2) = 6$ | 6. $9 \times 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1$ |
| 7. 318 | 8. 1 | 9. 10 |
| 10. 5472 | 11. 420 | 12. 6 |
| 13. 18 | 14. 6 | 15. 5 |
| 16. 6 | 17. 64 | 18. 4 |
| 19. 4 | 20. 630 | 21. 63 |
| 22. 97 | 23. 33 | 24. 255 |
| 25. 6 | 26. 5832 | 27. 439 |
| 28. 12 | | |

Catalog List

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