#### 1A- Simplify and Evaluate Expressions

**1.**

**2.**

**3.** Evaluate, if z = 197. 

**4.** Simplify: 2(14 - |-10 + 2|) - |11 - 2|2

**5.** Simplify: +

**6.** Simplify: -

**7.** Evaluate, if x = 145.  

**8.** Evaluate when *n* = 7. |*n* - 9| - |5 - *n*|

**9.** Evaluate when *n* = 5. 4|2 - 6*n*| + |4|

**10.** Simplify: |56 - 7 • 7| - 12|5 - 19|

**11.** Evaluate when *x* = 1.

**12.** Evaluate when *x* = -5 and *y* = 3.

**13.** Evaluate if x = 145. 

**14.** Simplify: -

**15.** Solve.

**16.** Evaluate when *x* = 6 and *y* =

**17.** Evaluate when *x* = -7 and *y* = -9.

**18.** Simplify the following expression.

**19.**

**20.**

**21.**

**22.** Evaluate, if z = 325.



**23.** Evaluate when *n* = 4.

|3*n* - 7| + |-4|

**24.** Evaluate when *x* = -2 and *y* = 6.

**25.** Simplify: +

**26.** Simplify: |8(4 - 8) + |8 - 52||

**27.** Evaluate, if m = 9.



**28.** Simplify the following expression.

**29.** Evaluate if m = 9.



**30.** Simplify the following expression.

# Answers

1.   
  
  
2.   
  
  
3.   
  
  
4. -69   
5.   
6.   
7.   
  
  
8. 0   
9. 116   
10. -161   
11.   
12.   
  
  
13.   
  
  
14.   
15.   
  
  
16.   
17.   
18.   
  
  
19.   
  
  
20.   
  
  
21.   
  
  
22.   
  
  
23. 9   
24.   
25.   
26. 15   
27.   
  
  
28.   
  
  
29.   
  
  
30.

# Explanations

1. When dividing two or more exponential expressions with the same base, subtract the exponent of the denominator from the exponent of the numerator.

2. When multiplying two or more exponential expressions with the same base, add the exponents.

3.

4. Use the order of operations to simplify the expression.

|  |  |  |
| --- | --- | --- |
| 2(14 - |-10 + 2|) - |11 - 2|2 | = | 2(14 - |-8|) - |9|2 |
|  | = | 2(14 - 8) - 81 |
|  | = | 2(6) - 81 |
|  | = | 12 - 81 |
|  | = | **-69** |

5. Use the Product Property of Radicals to simplify.

6. Use the Product Property of Radicals to simplify.

7.

8. Absolute value is the magnitude of a number irrespective of its sign.  
  
Evaluate the given expression piece-by-piece, using order of operations:  
  
|*n* - 9| = |7 - 9| = |-2| = 2  
  
|5 - *n*| = |5 - 7| = |-2| = 2  
  
2 - 2 = **0**

9. Absolute value is the magnitude of a number irrespective of its sign.  
  
Evaluate the given expression piece-by-piece, using order of operations:  
  
|2 - 6*n*| = |2 - 6 × 5| = |2 - 30| = |-28| = 28  
  
4 × 28 = 112  
  
|4| = 4  
  
112 + 4 = **116**

10. Use the order of operations to simplify the expression.

|  |  |  |
| --- | --- | --- |
| |56 - 7 • 7| - 12|5 - 19| | = | |56 - 49| - 12|-14| |
|  | = | |7| - 168 |
|  | = | **-161** |

11. To evaluate an algebraic expression at a given value, substitute and simplify.

12. To evaluate an algebraic expression at given values, substitute and simplify.

13.

14. Use the Product Property of Radicals to simplify.

15. Multiply the coefficients together, and multiply the numbers under the radicals, then solve.

16. To evaluate an algebraic expression at given values, substitute and simplify.

17. To evaluate an algebraic expression at given values, substitute and simplify.

18. If the bases are different but the exponents are the same, then multiply the bases and keep the exponent.

19. If the bases are different but the exponents are the same, then divide the bases and keep the exponent.

20. A negative exponent means to divide by that number of factors instead of multiplying.

21. Multiply the coefficients together, and multiply the numbers under the radicals, then solve.

22.

23. Absolute value is the magnitude of a number irrespective of its sign.  
  
Evaluate the given expression piece-by-piece, using order of operations:  
  
|3*n* - 7| = |3 × 4 - 7| = |12 - 7| = 5  
  
|-4| = 4  
  
5 + 4 = **9**

24. To evaluate an algebraic expression at given values, substitute and simplify.

25. Use the Product Property of Radicals to simplify.

26. Use the order of operations to simplify the expression.

|  |  |  |
| --- | --- | --- |
| |8(4 - 8) + |8 - 52|| | = | |8(-4) + |8 - 25|| |
|  | = | |-32 + |-17|| |
|  | = | |-32 + 17| |
|  | = | |-15| |
|  | = | **15** |

27.

28. If the bases are different but the exponents are the same, then multiply the bases and keep the exponent. This property can be used to simplify the numerator.

When dividing two or more exponential expressions with the same base, subtract the exponent of the denominator from the exponent of the numerator.

29.

30. When an exponential expression is raised to a power, multiply the exponents.