1.1 Practice WITH CalcChat® AND CalcView®

Review & Refresh

Find the missing value(s) in the ratio table. Then write the equivalent ratios.

1.

Oranges	5		15
Apples	4	8	

2.

Cars	3	9	
Trucks	2		36

Evaluate the expression.

3. $3(15 - 8) + 4$

$3(7) + 4$

$21 + 4$

25

4. $2 \times 20 - 13$

$40 - 13$

27

5. $-7 + (6 - 2) \div 2$

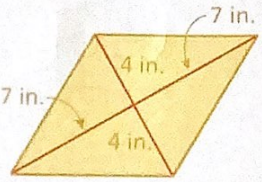
$-7 + 4 \div 2$

$-7 + 2$

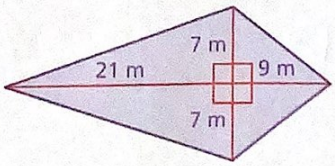
-5

Find the area of each figure.

6.



7.



Concepts, Skills, & Problem Solving

USING EXPONENT NOTATION **Write the power in repeated multiplication form. Then find the value of the power.** (See Exploration 1.)

8. 4^4

$4 \cdot 4 \cdot 4 \cdot 4$

256

9. 8^2

$8 \cdot 8$

64

10. 5^3

$5 \cdot 5 \cdot 5$

125

GO DIGITAL

WRITING EXPRESSIONS USING EXPONENTS **Write the product using exponents.** (See Example 1.)

11. $3 \cdot 3 \cdot 3 \cdot 3$

3^4

12. $6 \cdot 6$

6^2

13. $9 \cdot 9 \cdot 9 \cdot 9$

9^4

14. $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$

4^5

15. $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

2^7

16. $5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5$

5^8

17. $7 \cdot 7 \cdot 7 \cdot 2 \cdot 2$

$7^3 \cdot 2^2$

18. $8 \cdot 8 \cdot 8 \cdot 8 \cdot 6 \cdot 6 \cdot 6$

$8^4 \cdot 6^3$

19. $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 9 \cdot 9$

$3^5 \cdot 9^2$

EVALUATING EXPRESSIONS **Evaluate the expression.** (See Example 2.)

20. 5^2

25

21. -11^3

-1331

22. 1^6

1

23. 3^4

81

24. 13^3

2197

25. -9^4

-6561

4 MTR

26. **YOU BE THE TEACHER** Your friend evaluates the power -6^2. Is your friend correct? Explain your reasoning.

$-6^2 = (-6) \cdot (-6) = 36$

5 MTR **STRUCTURE** **Write the prime factorization of the number using exponents.**

27. 675

28. 280

29. 363

5 MTR **30. PATTERNS** The smallest doll is 2 inches tall. The height of each of the other dolls is twice the height of the next smaller doll. Write an expression involving a power that represents the height of the largest doll. What is the height of the largest doll?

USING ORDER OF OPERATIONS **Evaluate the expression.** (See Example 3.)

31. $5 + 3 \cdot 2^3$

$5+3\cdot 8$

$5+24$

29

▶32. $2 + 7 \cdot 3^2$

$2+7\cdot 9$

$2+63$

65

33. $(13^2 - 12^2) \div 5$

$(169-144)\div 5$

$25\div 5$

5

34. $\frac{1}{2}(4^3 - 6 \cdot 3^2)$

$\frac{1}{2}(64-6\cdot 9)$

$\frac{1}{2}(64-54)$

$\frac{1}{2}(10)$

5

35. $\frac{1}{2}(7 + 5^3)$

$\frac{1}{2}(7+125)$

$\frac{1}{2}(132)$

66

36. $-10 \times (24 - 4^2)$

$(24-16)$

$-10\cdot 8$

-80

37. $(9^2 - 15 \cdot 2) \div 17$

$(81-30)\div 17$

$51\div 17$

3

38. $-6 \cdot (-5^2 + 20)$

$-6\cdot(-25+20)$

$-6\cdot(-5)$

30

39. $(-4 + 12 - 6^2) \div 7$

$(-4+12-36)\div 7$

$-28\div 7$

-4

1.2 Practice WITH CalcChat® AND CalcView®

Review & Refresh

Write the product using exponents.

1. $11 \cdot 11 \cdot 11 \cdot 11 \cdot 11$

11^5

2. $6 \cdot 6 \cdot 6 \cdot 3 \cdot 3$

$6^3 \cdot 3^2$

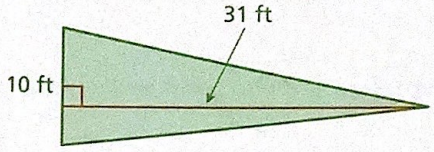
Evaluate the expression when $x = 2$ and $z = -3$.

3. $-4x$

4. xz

5. $7z + 6x$

6. Find the area of the triangle.



Concepts, Skills, & Problem Solving

FINDING PRODUCTS OF POWERS Write the expression in repeated multiplication form. Then write the expression as a power. (See Exploration 1.)

7. $5^6 \cdot 5^3$

5^9

8. $(6^4)^2$

6^8

9. $8^3 \cdot 8^4$

8^7

GO DIGITAL

FINDING POWERS **Simplify the expression. Write your answer as a power.** (See Examples 1 and 2.)

10. $3^2 \cdot 3^2$

3^4

11. $8^{10} \cdot 8^4$

8^{14}

12. $(5^4)^3$

5^{12}

13. $(3^2)^4$

3^8

14. $4^5 \cdot 4^7$

4^{12}

15. $7^6 \cdot 7^1$

7^7

16. $(1^{12})^3$

1^{36}

17. $(5^2)^3$

5^6

18. $6^2 \cdot 6^4$

6^6

1 MTR

19. HELP A CLASSMATE Your friend wants to simplify the expression $5^2 \cdot 5^9$. Explain how your friend can complete their work.

add the exponents

5^{11}

$5^2 \cdot 5^9 = (5)$

$=$

FINDING A POWER OF A PRODUCT **Simplify the expression. Write your answer as a product of powers.** (See Example 3.)

20. $(6 \cdot 4)^3$

$6^3 \cdot 4^3$

21. $(3 \cdot 7)^5$

$3^5 \cdot 7^5$

22. $(2 \cdot 9)^4$

$2^4 \cdot 9^4$

23. $(8 \cdot 7)^4$

$8^4 \cdot 7^4$

24. $(1 \cdot 5)^{12}$

$1^{12} \cdot 5^{12}$

25. $(10 \cdot 3)^2$

$10^2 \cdot 3^2$

5 MTR

26. STRUCTURE Is $3^2 + 3^3$ equal to 3^5? Explain.

no the property only works with products (multiplication)