

Write as a repeated multiplication

1)

$$\frac{2^6}{2^2}$$

Repeated Multiplication

$$\frac{\cancel{2} \times \cancel{2} \times 2 \times 2 \times 2 \times 2}{\cancel{2} \times \cancel{2}}$$

Evaluate

16

Single Power

2^4

2)

$$\frac{7^6}{7^4}$$

$$\frac{7 \times 7 \times 7 \times 7 \times 7 \times 7}{7 \times 7 \times 7 \times 7}$$

49

7^2

3)

$$\frac{(-5)^7}{(-5)^3}$$

$$\frac{\cancel{(-5)} \times \cancel{(-5)} \times \cancel{(-5)} \times (-5) \times (-5) \times (-5) \times (-5)}{\cancel{(-5)} \times \cancel{(-5)} \times \cancel{(-5)}}$$

625

$(-5)^4$

Exponent Law for a Quotient of Powers

[dividing]

To divide powers with the same base, subtract the exponents.

$$a^m \div a^n = a^{m-n} \quad \left. \vphantom{a^m \div a^n} \right\} \frac{a^m}{a^n} = a^{m-n}$$

The base must be the same!

Middle step single

a) $(-2)^6 \div (-2)^5$

$(-2)^{6-5}$

power

$(-2)^1$

(-2)

Express as a **single power** then **evaluate**

a) $\frac{5^8}{5^2} =$

middle step

5^{8-2}

Single power

5^6

Evaluate

15 625

b) $\frac{(-2)^3}{(-2)^0}$

$(-2)^{3-0}$

$(-2)^3 \leftarrow \text{sp.}$

-8

c) $8^7 \div 8^4$

middle step

8^{7-4}

single power

8^3

Evaluate

512

d) $(-4)^7 \times (-4)^2$

$(-4)^{7+2}$

$(-4)^9$

-262 144

Express as a single power.

$$a) 3^2 \times 3^4 \div 3^3$$

Middle step

$$3^{2+4-3}$$
$$3^3$$

$$b) (-4)^8 \div (-4)^3 \times (-4)^2$$

middle step

$$(-4)^{8-3+2}$$
$$(-4)^7$$

Express as a single power:

c. $3^4 \times 3^6 \div 3^2$

$$3^{4+6-2}$$
$$3^8$$

d. $\frac{3^8 \times 3^9 \times 3^1}{3^4 \times 3^2}$

$$\frac{3^{8+9+1}}{3^{4+2}}$$

$$\frac{3^{18}}{3^6}$$

$$3^{18-6}$$
$$3^{12}$$

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Questions 4, 5, 7, 8

#4.
a) $5^5 \times 5^4$
 5^{5+4}
 5^9

#5.a) $4^5 \div 4^3$
 4^{5-3}
 4^2
Quo
Middle Step
Single Power

#7, #8. a) $3^4 \times 3^7 \div 3^{11}$
 3^{4+7-11}

