

10.4

Zero and Negative Exponents

Do Now

Simplify.

1) $h^2 \cdot h^4$

5) $(5a^8)^2$

2) $z \cdot z^{12}$

6) $\frac{x^8}{x^3}$

3) $(y^2)^4$

7) $\frac{a^9b}{a^2}$

4) $(x^2y^3)^3$

Understanding Zero Exponents

Use the pattern to find the zero exponent result:

	Simplified Exponent	Evaluate
$\frac{2^6}{2^2}$		
$\frac{2^6}{2^3}$		
$\frac{2^6}{2^4}$		
$\frac{2^6}{2^5}$		
$\frac{2^6}{2^6}$		

Zero Exponent Rule

Any number to the zero power equals to _____.

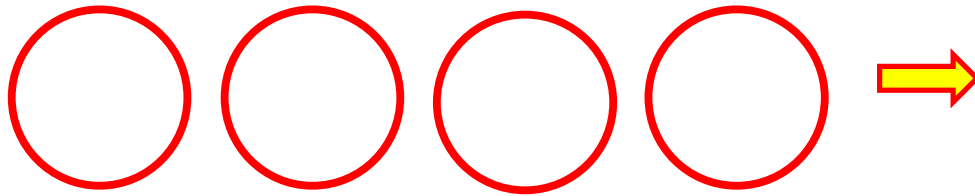
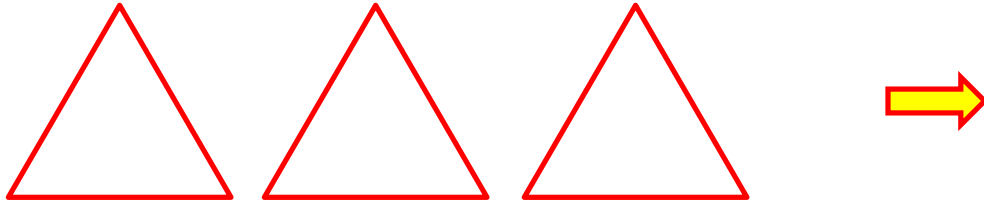
a) 4^0

b) 17^0

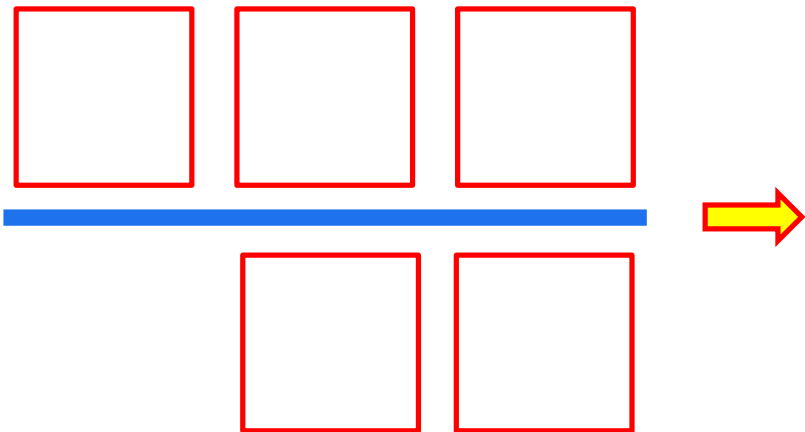
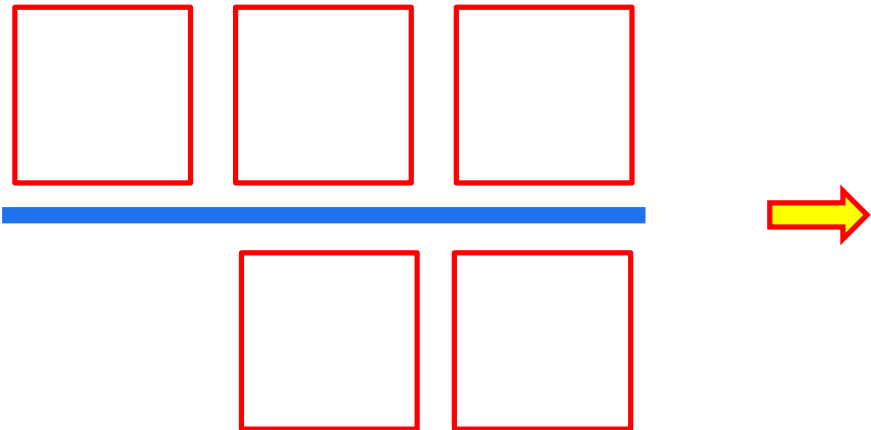
c) 125^0

d) $5,785,123^0$

Understanding: Gathering and Cancelling Activity



Understanding: Gathering and Cancelling Activity



Understanding: Gathering and Cancelling Activity

Gather and cancel as much as possible. (*Order of shapes doesn't matter*)

1) $\square \square \square \square \square \triangle \triangle \triangle \bigcirc \bigcirc \bigcirc \bigcirc$

2) $\boxed{3} \triangle \triangle \bigcirc \triangle \bigcirc \bigcirc \bigcirc \boxed{2} \boxed{6}$

3) $\bigcirc \triangle \triangle \boxed{7} \bigcirc \boxed{3} \square$

4) $\triangle \triangle \bigcirc \triangle$

Understanding: Gathering and Cancelling Activity

Gather and cancel as much as possible. (*Order of shapes doesn't matter*)

5)

$$\begin{array}{cccccccccccc} \square & \square & \square & \square & \square & \triangle & \triangle & \triangle & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\ \hline & & & & & \square & \square & \triangle & \triangle & \triangle & \bigcirc & \bigcirc \end{array}$$

6)

$$\begin{array}{ccccccccccccccc} \square & \square & \triangle & \triangle & \triangle & \triangle & \triangle & \triangle & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\ \hline & & & \triangle & \triangle & \triangle & \triangle & \bigcirc & \bigcirc & & & & & \end{array}$$

7)

$$\begin{array}{cccccccc} \square & \square & \square & \square & \triangle & \triangle & \triangle & \triangle & \bigcirc & \bigcirc \\ \hline & & \square & \triangle & \bigcirc & \bigcirc & \square & \square & \square & \end{array}$$

Understanding: Gathering and Cancelling Activity

Gather and cancel as much as possible. (*Order of shapes doesn't matter*)

8)

$$\begin{array}{ccccccc} \triangle & \triangle & \triangle & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\ \hline \triangle & \triangle & \triangle & \triangle & \bigcirc & \bigcirc & \end{array}$$

9)

$$\begin{array}{ccccccc} & & \triangle & \square & \square & 8 & \\ \hline \square & \square & \square & 8 & \square & \square & \triangle \end{array}$$

10)

$$\begin{array}{ccc} \square & \triangle & \bigcirc \\ 5 & 3 & 4 \\ \hline \bigcirc & \triangle & \square \\ 4 & 3 & 3 \end{array}$$

Understanding: Gathering and Cancelling Activity

$$\frac{\boxed{-3}}{\quad} \rightarrow$$

$$\frac{\quad}{\boxed{-3}} \rightarrow$$

Understanding: Gathering and Cancelling Activity

$$\begin{array}{r} \triangle 7 \quad \triangle -5 \\ \hline \end{array}$$

|

→

$$\begin{array}{r} \bigcirc -5 \\ \hline \bigcirc -9 \end{array}$$

→

Understanding: Gathering and Cancelling Activity

Gather and cancel as much as possible. (*Order of shapes doesn't matter*)

11)

$$\begin{array}{r} \triangle \triangle \triangle \\ \hline \triangle \triangle \triangle \end{array}$$

12)

$$\begin{array}{r} \boxed{8} \quad \boxed{-8} \\ \hline \end{array}$$

13)

$$\begin{array}{r} \textcircled{4} \\ \hline \textcircled{-2} \end{array}$$

Understanding: Gathering and Cancelling Activity

Gather and cancel as much as possible. (*Order of shapes doesn't matter*)

14)

$$\frac{\triangle_{-3} \triangle_{-2}}{\quad}$$

15)

$$\frac{\quad}{\square_{-3} \square_8}$$

13)

$$\frac{\bigcirc_2}{\bigcirc_{-2} \bigcirc_4}$$