

# Find the Fiction

Below are solutions to a variety of problems. Most of the solutions are **Facts**, however some are **Fiction**. Individually or with a partner identify the **fiction**! Please support your reasoning.

#1. Simplify using exponent Laws:

$$\begin{aligned} (a) \quad 7^5 \div 7^3 \\ = 7^{5-3} \\ = 7^2 \end{aligned}$$

$$\begin{aligned} (b) \quad 8^4 \times 8^7 \\ = 8^{4+7} \\ = 8^{11} \end{aligned}$$

$$\begin{aligned} (c) \quad (-2)^3 \div (-2)^2 \\ = (-2)^{3-2} \\ = (-2) \end{aligned}$$

$$\begin{aligned} (d) \quad 7 \times 7^5 \\ = 7^{0+5} \\ = 7^5 \end{aligned}$$

$$\begin{aligned} (e) \quad [(-2)^3]^4 \\ = (-2)^{3 \times 4} \\ = -2^{12} \end{aligned}$$

$$\begin{aligned} (f) \quad (2 \times 4)^3 \\ = 2^3 \times 4^3 \end{aligned}$$

$$\begin{aligned} (g) \quad [(-2)^2 + (-3)^4]^2 \\ = (-2)^{2 \times 2} + (-3)^{4 \times 2} \\ = (-2)^4 + (-3)^8 \end{aligned}$$

#2. Simplify and Evaluate

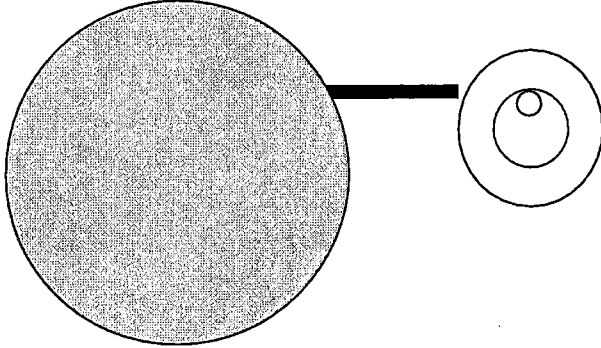
$$\begin{aligned} (a) \quad 2^3 \times 2^2 - 2^0 + 2^4 \div 2^3 \\ = 2^{3+2} - 2^0 + 2^4 \div 2^3 \\ = 2^5 - 2^0 + 2^4 \div 2^3 \\ = 2^5 - 2^0 + 2^{4-3} \\ = 2^5 - 2^0 + 2^1 \\ = 32 - 0 + 2 \\ = 34 \end{aligned}$$

$$\begin{aligned} (b) \quad \frac{10^6 \times 10^0}{10^3 \times 10^2} \\ = \frac{10^{6+0}}{10^{3+2}} \\ = \frac{10^6}{10^5} \\ = 10^{6-5} \\ = 10^1 \\ = 10 \end{aligned}$$

## Unit 2 Puzzle

### Bird's Eye View

This is a view through the eyes of a bird. What does the bird see?



To find out, simplify or evaluate each expression on the left, then find the answer on the right.

Write the corresponding letter beside the question number.

The numbers at the bottom of the page are question numbers.

Write the corresponding letter over each number.

1. $5 \times 5 \times 5 \times 5$	_____	A	100 000
2. $2^3$	_____	P	$5^6$
3. $\frac{3^6}{3^2}$	_____	S	0
4. $4 \times 4 \times 4 \times 4 \times 4$	_____	E	1
5. $(-2)^3$	_____	F	$3^4$
6. $(-2) + 4 \div 2$	_____	G	6
7. $(5^2)^3$	_____	I	8
8. $3^2 - 2^3$	_____	O	$4^6$
9. $10^2 \times 10^3$	_____	N	$4^5$
10. $5 + 3^0$	_____	R	$5^4$
11. $4^7 \div 4$	_____	Y	-8

9    7   8   1   6   11   4    3   1   5   2   4   10    9   4    8   10   10

Key

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$$(c) (-2)^3 \div (-2)^2 \\ = (-2)^{3-2} \\ = (-2) \checkmark$$

$$(d) 7^1 \times 7^5 \\ = 7^{1+5} \\ = 7^6 \times$$

$$(e) [(-2)^3]^4 \\ = (-2)^{3 \times 4} \\ = (-2)^{12} \times$$

$$(f) (2 \times 4)^3 \\ = 2^3 \times 4^3 \checkmark$$

$$(g) [(-2)^2 + (-3)^4]^2 \text{ not one of the rules!} \\ = (-2)^{2 \times 2} + (-3)^{4 \times 2} \\ = (-2)^4 + (-3)^8 \times$$

#2. Simplify and Evaluate

$$(a) 2^3 \times 2^2 - 2^0 + 2^4 \div 2^3 \\ = 2^{3+2} - 2^0 + 2^4 \div 2^3 \\ = 2^5 - 2^0 + 2^4 \div 2^3 \\ = 2^5 - 2^0 + 2^{4-3} \\ = 2^5 - 2^0 + 2^1 \\ = 32 - 1 + 2 \\ = 34 \checkmark$$

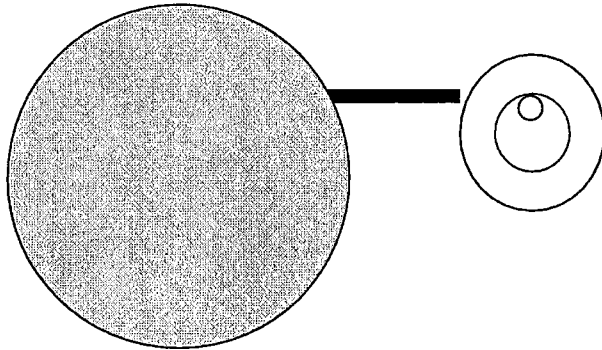
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1. $5 \times 5 \times 5 \times 5$	<u>5<sup>4</sup></u>	R	A	100 000
2. $2^3$	<u>8</u>	I	P	5 <sup>6</sup>
3. $\frac{3^6}{3^2}$	<u>3<sup>4</sup></u>	F	S	0
4. $4 \times 4 \times 4 \times 4 \times 4$	<u>4<sup>5</sup></u>	N	E	1
5. $(-2)^3$	<u>-8</u>	Y	F	3 <sup>4</sup>
6. $(-2) + 4 \div 2$	<u>0</u>	S	G	6
7. $(5^2)^3$	<u>5<sup>6</sup></u>	P	I	8
8. $3^2 - 2^3$	<u>1</u>	E	O	4 <sup>6</sup>
9. $10^2 \times 10^3$	<u>10<sup>5</sup> 100000</u>	A	N	4 <sup>5</sup>
10. $5 + 3^0$	<u>6</u>	G	R	5 <sup>4</sup>
11. $4^7 \div 4^1$	<u>4<sup>6</sup></u>	O	Y	-8

A P E R S O N F R I N G A N E G G  
 9 7 8 1 6 11 4 3 1 5 2 4 10 9 4 8 10 10