

Math 20 Section 2.4 Exponents with Positive and Negative Bases

For problems 1 – 6, match the problem with its equivalent.

- | | |
|--------------|---|
| 1. $(-12)^4$ | A. $12 \times 12 \times 12 \times 12$ |
| 2. -12^4 | B. $-12 \times 12 \times 12 \times 12$ |
| 3. 12^4 | C. $(-12) \times (-12) \times (-12) \times (-12)$ |
| 4. 6^5 | D. $-6 \times 6 \times 6 \times 6 \times 6$ |
| 5. -6^5 | E. $6 \times 6 \times 6 \times 6 \times 6$ |
| 6. $(-6)^5$ | F. $(-6) \times (-6) \times (-6) \times (-6) \times (-6)$ |

For problems 7 – 12, write out how to expand the exponents. Do NOT MULTIPLY to find the answer. I just want you to set it up.

- | | |
|---------------|--------------|
| 7. $(-3)^6$ | 8. 7^4 |
| 9. 35^3 | 10. -155^4 |
| 11. $(-21)^5$ | 12. -13^7 |

For problems 13 – 18, evaluate the exponents.

- | | | |
|-----------|------------|--------------|
| 13. 2^6 | 14. -2^6 | 15. $(-2)^6$ |
| 16. 6^3 | 17. -6^3 | 18. $(-6)^3$ |

For problems 19 – 25, multiply the integers.

19. $5 \times 2 \times (-3)$

20. $(-7) \times (-8)$

21. $9 \times 2 \times 2$

22. $1 \times 5 \times (-6) \times 2$

23. $(-2) \times (-6) \times (-1)$

24. $3 \times (-8)$

25. 15×3

26. $(-2) \times (-6) \times (-7)$

Finish the table and answer the question.

Exponents	Expansion	Answer
$(-1)^1$	(-1)	-1
$(-1)^2$	$(-1) \times (-1)$	1
$(-1)^3$	$(-1) \times (-1) \times (-1)$	-1
$(-1)^4$		
$(-1)^5$		
$(-1)^6$		
$(-1)^7$		
$(-1)^8$		

What pattern do you notice in the answers?

Think about continuing to pattern to solve:

$(-1)^{101} = \underline{\hspace{2cm}}$

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For problems 1 – 6, match the problem with its equivalent.

1. $(-12)^4$ A. $12 \times 12 \times 12 \times 12$
 2. -12^4 B. $-12 \times 12 \times 12 \times 12$
 3. 12^4 C. $(-12) \times (-12) \times (-12) \times (-12)$
 4. 6^5 D. $-6 \times 6 \times 6 \times 6 \times 6$
 5. -6^5 E. $6 \times 6 \times 6 \times 6 \times 6$
 6. $(-6)^5$ F. $(-6) \times (-6) \times (-6) \times (-6) \times (-6)$

For problems 7 – 12, write out how to expand the exponents. Do NOT MULTIPLY to find the answer. I just want you to set it up.

7. $(-3)^6$ $(-3)(-3)(-3)(-3)(-3)(-3)$ 8. 7^4 $7 \times 7 \times 7 \times 7$
 9. 35^3 $35 \times 35 \times 35$ 10. -155^4 $-1 \times 155 \times 155 \times 155 \times 155$
 11. $(-21)^5$ $(-21)(-21)(-21)(-21)(-21)$ 12. -13^7 $-1 \times 13 \times 13 \times 13 \times 13 \times 13 \times 13$

For problems 13 – 18, evaluate the exponents.

13. 2^6 2 \times 2 \times 2 \times 2 \times 2 \times 2 14. -2^6 $-1 \times 2 \times 2 \times 2 \times 2 \times 2$ 15. $(-2)^6$ $(-2)(-2)(-2)(-2)(-2)(-2)$
 64 -64 64
16. 6^3 $6 \times 6 \times 6$ 17. -6^3 $-1 \times 6 \times 6 \times 6$ 18. $(-6)^3$ $(-6)(-6)(-6)$
 216 -216 -216

For problems 19 – 25, multiply the integers.

19. $5 \times 2 \times (-3)$

 -30

20. $(-7) \times (-8)$

 65

21. $9 \times 2 \times 2$

 36

22. $1 \times 5 \times (-6) \times 2$

 -60

23. $(-2) \times (-6) \times (-1)$

 -12

24. $3 \times (-8)$

 -24

25. 15×3

 45

26. $(-2) \times (-6) \times (-7)$

 -84

Finish the table and answer the question.

Exponents	Expansion	Answer
$(-1)^1$	(-1)	-1
$(-1)^2$	$(-1) \times (-1)$	1
$(-1)^3$	$(-1) \times (-1) \times (-1)$	-1
$(-1)^4$	$(-1) \times (-1) \times (-1) \times (-1)$	1
$(-1)^5$	$(-1) \times (-1) \times (-1) \times (-1) \times (-1)$	-1
$(-1)^6$	$(-1) \times (-1) \times (-1) \times (-1) \times (-1) \times (-1)$	1
$(-1)^7$	$(-1) \times (-1) \times (-1) \times (-1) \times (-1) \times (-1) \times (-1)$	-1
$(-1)^8$	$(-1) \times (-1) \times (-1) \times (-1) \times (-1) \times (-1) \times (-1) \times (-1)$	1

What pattern do you notice in the answers?

The answers alternate between 1 and -1.

Think about continuing to pattern to solve:

$$(-1)^{101} = \underline{-1}$$