

Comparing and Ordering Integers

Name: _____

Date: _____

Score: _____ / 18

The trick to comparing integers is to picture them on a number line. Numbers get larger as you move to the **right** and smaller as you move to the **left**. This is especially handy with negatives—for example, -3 is greater than -8 because -3 is closer to zero (farther right on the line). When a problem asks you to *order* integers from least to greatest, you are simply listing them in the same left-to-right order they appear on the number line. Once you have this picture in your head, symbols like $<$, $>$, and $=$ become second nature.

Key Concepts & Quick Review

Comparing: $a > b$ means a is to the **right** of b on the number line. $a < b$ means a is to the **left** of b .

Negatives rule: Among two negative integers, the one **closer to zero** is **greater**. **Ordering:** list integers from least (leftmost) to greatest (rightmost).



Examples

① Compare -7 and -3 . Write $<$, $>$, or $=$.

Think It Through: Put both numbers on a number line in your mind. The number -3 is closer to zero, so it sits to the right of -7 . Numbers to the right are greater, and numbers to the left are smaller. Therefore $-7 < -3$.

Answer: $-7 < -3$

② Order from **least to greatest:** $4, -9, 2, -1, -6$.

Think It Through: Imagine placing all five integers on a number line. The farthest left is -9 , then comes -6 , then -1 . After the negatives come the positives: 2 and then 4 . Reading from left to right gives the order from least to greatest.

Answer: $-9 < -6 < -1 < 2 < 4$

Practice Problems

Write $<$, $>$, or $=$ in each box to make the statement true.



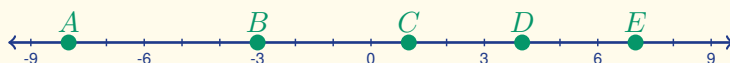
- | | | | |
|----------------------|-------|---------------------------|-------|
| 1. $-5 \square -2$ | _____ | 9. $- -4 \square -4$ | _____ |
| 2. $-8 \square -11$ | _____ | 10. $ -10 \square -12 $ | _____ |
| 3. $7 \square -7$ | _____ | 11. $-20 \square -19$ | _____ |
| 4. $-4 \square 0$ | _____ | 12. $0 \square -1$ | _____ |
| 5. $-15 \square -15$ | _____ | 13. $-(-3) \square -3$ | _____ |
| 6. $-1 \square -100$ | _____ | 14. $- 7 \square -7$ | _____ |
| 7. $-9 \square 3$ | _____ | 15. $-25 \square -52$ | _____ |
| 8. $ -6 \square 6$ | _____ | | |

Study Tips

- 👉 Among two negative integers, the one with the **smaller absolute value** is **greater**: $-3 > -10$ because $3 < 10$.
- 👉 Any positive integer is always greater than any negative integer: $1 > -1,000,000$.
- 👉 When ordering a mixed set, negatives always come before zero, and zero comes before all positives.

Word Problems

16. Five students competed in a math quiz bowl where correct answers earn points and incorrect answers lose points. Their final net scores were: -16 , 8 , -4 , -21 , and 5 . Order the scores from *lowest to highest* and identify the student with the best score and the student with the worst score. Then find the range of scores (highest minus lowest). _____
17. Four ocean animals are recorded at the following depths below the surface: a shark at -85 feet, a jellyfish at -12 feet, a sperm whale at -210 feet, and a yellowfin tuna at -47 feet. Order the animals from *shallowest to deepest* depth. How much deeper is the sperm whale than the shark? _____
18. Five points are plotted on the number line shown here. Identify the integer at each point, then list the points in order from *least to greatest*. Which point has the greatest absolute value? _____



Answer Keys

- | | |
|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1) <
2) >
3) >
4) <
5) =
6) >
7) <
8) =
9) =
10) <
11) <</p> | <p>12) >
13) >
14) =
15) >
16) Order: $-21 < -16 < -4 < 5 < 8$; best: 8, worst: -21; range = 29.
17) Shallowest to deepest: jellyfish, tuna, shark, whale; whale is 125 <i>ft</i> deeper.
18) $A = -8, B = -3, C = 1, D = 4, E = 7$; order: $A < B < C < D < E$; greatest absolute value: A</p> |
|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Step-by-Step Explanations

Strategy: For Comparing and Ordering Integers, compare by position, not by how large the digits look; farther left means smaller, and farther right means greater. A quick integer-comparison check is whether the final answer matches what the question asks for.

Practice 1: $-5 \square -2$ **Answer:** <

At the beginning of the practice, place both integers mentally on the number line; the one farther left is smaller.

Practice 15: $-25 \square -52$ **Answer:** >

For the second model problem, place both integers mentally on the number line; the one farther left is smaller.

Word-problem notes:

16. Answer: Order: $-21 < -16 < -4 < 5 < 8$; best: 8, worst: -21 ; range = 29.

Order the scores from most negative to most positive: $-21, -16, -4, 5, 8$. The best score is the greatest number, which is 8. The worst score is the least number, which is -21 . The range is highest minus lowest: $8 - (-21) = 29$.

17. Answer: Shallowest to deepest: jellyfish, tuna, shark, whale; whale is 125 *ft* deeper.

Shallowest means closest to zero, so compare the depths on a number line. That gives $-12, -47, -85, -210$, which corresponds to jellyfish, tuna, shark, and whale. To find how much deeper the whale is than the shark, subtract the depths: $-210 - (-85) = -125$. The whale is therefore 125 feet deeper.

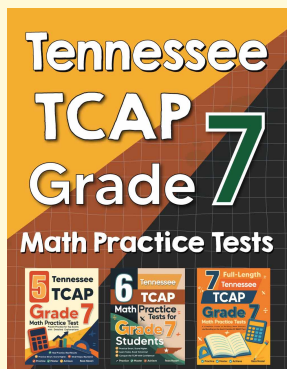
18. Answer: $A = -8, B = -3, C = 1, D = 4, E = 7$; order: $A < B < C < D < E$; A has the greatest absolute value ($|A| = 8$).

Read each value off the number line: $A = -8, B = -3, C = 1, D = 4, E = 7$. Negative numbers are less than positives, and among negatives the more negative number is smaller, so the order from least to greatest is A, B, C, D, E . The absolute values are 8, 3, 1, 4, 7; the greatest is 8, which belongs to point A .



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