When Both Sides Are Positive

IN04-V1 · storyboard · IN04 Powers, roots and reciprocals of positive numbers. Read each picture with its sentences.

Picture 1

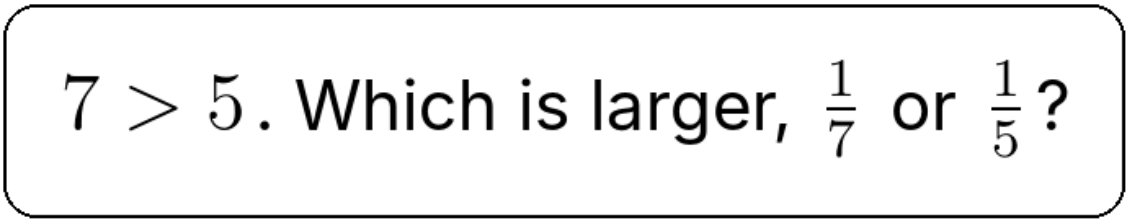
$2 > -3$. Which is larger, 2^2 or $(-3)^2$?

$$2^2 = 4, \quad (-3)^2 = 9$$

$\boxed{4 < 9}$ the order changed

1. 2 is greater than negative 3.
2. Which is larger, 2 squared or negative 3 squared?
3. 2 squared is 4, and negative 3 squared is 9.
4. 4 is less than 9: squaring changed the order, because one side was negative.
5. Square only when both sides are positive.

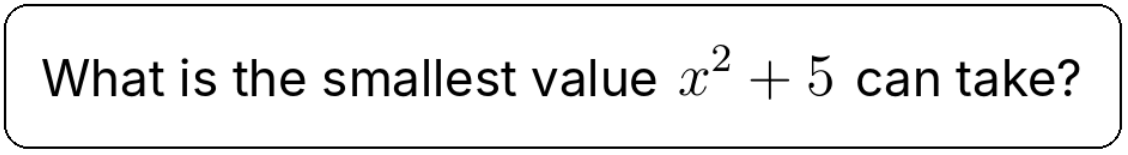
Picture 2



$$\frac{1}{7} < \frac{1}{5}$$ reciprocals flip

6. 7 is greater than 5.
7. Which is larger, one seventh or one fifth?
8. Sevenths are smaller pieces than fifths, so one seventh is less than one fifth.
9. Reciprocals of two positive numbers flip the sign.

Picture 3

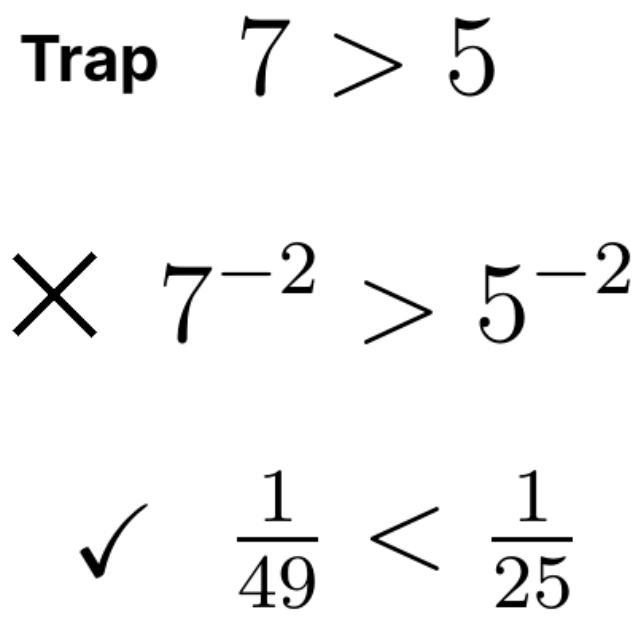


$x^2 \geq 0$ a square is never negative

$x^2 + 5 \geq 5$ equal to 5 when x = 0

10. What is the smallest value x squared plus 5 can take?
11. A square is never negative: x squared is at least 0.
12. So x squared plus 5 is at least 5, and it equals 5 when x is 0.
13. The smallest value is 5.

Picture 4



14. Watch for the trap: negative powers are reciprocals, so they don't keep the sign.
15. 7 to the negative 2 is 1 over 49, which is less than 1 over 25.