

☒ Yes

91%

☐ No

9%

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FEEDBACK

Yes, just like a rectangle has the same area if you rotate it 90 degrees.

1. Finite X infinite

0 points possible (ungraded)

If A is finite and B is infinite then $A \times B$ can be:

☒ empty ✓☐ nonempty finite☒ infinite ✓

Explanation

If A is empty then $A \times B$, otherwise it is infinite.

You have used 3 of 4 attempts

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2. Order matters

0/1 point (graded)

Which of the following ensures that $A \times B = B \times A$?

☐ $A = B$ ✓

☒ $A = \emptyset$ ✓

☒ $B = \emptyset$ ✓

☐ $A \cap B = \emptyset$

☐ $|A| = |B|$



Explanation

- True.
- True. $A \times B = B \times A = \emptyset$
- True. Same as above.
- False. Let $A = \{1\}, B = \{2\}$. Then $A \times B \neq B \times A$
- False. Same as above.

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3. Cartesian product shape

0 points possible (ungraded)

Taking the geometric view of Cartesian products, if A and B are real intervals of positive length in \mathbb{R} , then $A \times B$ is a:

☐ line,☒ rectangle, ✓☐ circle,☐ triangle,☐ none of above.

Explanation

Let $A = [a, b)$, $B = [c, d)$ Then

$A \times B = \{(x, y) \mid a \leq x < b, c \leq y < d, x \in \mathbb{R}, y \in \mathbb{R}\}$ which is a rectangle.

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4. Divisors

0.0/2.0 points (graded)

How many positive divisors does 2016 have?

1680

✖ Answer: 36

1680

Explanation

$$2016 = 2^5 \cdot 3^2 \cdot 7.$$

Hence any positive divisor of 2016 can be factored as $2^x \cdot 3^y \cdot 7^z$, where $x \in \{0, 1, \dots, 5\}$, $y \in \{0, 1, 2\}$ and $z \in \{0, 1\}$. By the product rule, there are $6 \times 3 \times 2 = 36$ divisors.

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