

Explain why division by zero has no answer

NAME	DATE	SCORE / 10
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1 Which answer and reason are right for $2 \div 0$?

- ☐ There is no answer, because $2 \times 0 = 2$.
☐ 2, because dividing by 0 does not change a number.
☐ There is no answer, because no number times 0 is 2. ☐ 0, because $0 \times 2 = 0$.

2 “A number divided by a bigger number is less than 1.” Is this always, sometimes or never true?

- ☐ Always true ☐ Sometimes true ☐ Never true

3 “Zero divided by a number that is not zero is zero.” Is this always, sometimes or never true? Explain how you know, using 18 and a multiplication.

4 Which answer and reason are right for $0 \div 2$?

- ☐ There is no answer, because you cannot divide 0. ☐ 0, because $0 \times 2 = 0$.
☐ 2, because $0 \div 2$ is the same as $2 \div 0$.
☐ There is no answer, because no number times 2 is 0.

5 “A number divided by 2 is less than the number.” Is this always, sometimes or never true?

- ☐ Always true ☐ Sometimes true ☐ Never true

6

“A number divided by itself is 1.” Is this always, sometimes or never true? Explain how you know, using 14 and a multiplication.

7

Which answer and reason are right for $12 \div 0$?

- ☐ There is no answer, because no number times 0 is 12.
- ☐ There is no answer, because $12 \times 0 = 12$.
- ☐ 12, because dividing by 0 does not change a number. ☐ 0, because $0 \times 12 = 0$.

8

“A number divided by zero is zero.” Is this always, sometimes or never true?

- ☐ Always true ☐ Sometimes true ☐ Never true

9

Which answer and reason are right for $7 \div 0$?

- ☐ 7, because dividing by 0 does not change a number.
- ☐ There is no answer, because $7 \times 0 = 7$.
- ☐ There is no answer, because no number times 0 is 7. ☐ 0, because $0 \times 7 = 0$.

10

Which answer and reason are right for $5 \div 0$?

- ☐ There is no answer, because no number times 0 is 5.
- ☐ There is no answer, because $5 \times 0 = 5$.
- ☐ 5, because dividing by 0 does not change a number. ☐ 0, because $0 \times 5 = 0$.

Explain why division by zero has no answer

1 There is no answer, because no number times 0 is 2.

2 Always true

4 0, because $0 \times 2 = 0$.

5 Sometimes true

7 There is no answer, because no number times 0 is 12.

8 Never true

9 There is no answer, because no number times 0 is 7.

10 There is no answer, because no number times 0 is 5.

3 A written explanation

A model answer: Always true. $0 \div 18 = 0$, because $0 \times 18 = 0$. The same is true for any number that is not zero: 0 times that number is 0.

What counts as right: Counts as right if it makes these points: (1) the answer, always true; (2) $0 \div 18 = 0$ because $0 \times 18 = 0$; (3) the same multiplication works for every number that is not zero. Giving only the answer 0, with no multiplication, does not count.

6 A written explanation

A model answer: Sometimes true. $14 \div 14 = 1$, because $1 \times 14 = 14$. But $0 \div 0$ has no answer, since every number times 0 is 0, so it is not true for zero.

What counts as right: Counts as right if it makes these points: (1) the answer, sometimes true; (2) $14 \div 14 = 1$ because $1 \times 14 = 14$; (3) $0 \div 0$ has no single answer, so the statement is not true for zero. Saying it is always true, or leaving zero out, does not count.