THIRD SPACE
LEARNING

Word Problems

11 place value and rounding questions to develop reasoning and problem solving skills

Grade 5

Questions

Name: ……………………………………….   Date: …………………………………………

1 Ashley writes the following equations:

$1 \times 10^1 = 10$

$1 \times 10^2 = 100$

$1 \times 10^3 = 1,000$

Explain a place value pattern shown by Ashley's equations.

Answer

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2 The average adult cow weighs 1,400 pounds. The average chimpanzee weighs 140 pounds. Complete the statement.

A chimpanzee is ⬚ the size of an adult cow.

3   Each of the students in Mr. Liu's class has one of the following numbers:

59.023   48.501   43.056   60.001   47.998

They each read a statement about their number:
- Edison says 'My number is 60 when rounded to the nearest whole.'
- Justina says 'When rounded to the nearest ten my number is 40.'
- Cheney says 'If I round my number to the nearest one I have 48.'
- Matt says 'My number rounded to the nearest ten is 50.'
- May says 'My number rounded to the nearest hundredth is 59.02.'

Decide which student has each number.

Edison	Justina	Cheney	Matt	May

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4   Virginia and Aleta are discussing the expression $130{,}000 \div 10^5$.

Virigina says, "The answer will be 50 times smaller than 130,000."
Aleta says, "No, the answer will be 100,000 times smaller than 130,000."

Critique both responses, explaining what parts are correct and what parts are incorrect.

Answer

5 7.18 > 7.9

"Since they both have 7 ones, I looked at the decimal, and 18 is bigger than 9."

Above is Brenden's work and his thinking. Critique his response, explaining what parts are correct and what parts are incorrect.

Answer

6 It snowed about 5.5 inches in Cedarville. If the actual inches were rounded to the nearest tenth, what are 3 possible depths it could have snowed?

Answer 1

Answer 2

Answer 3

7 Shayla was solving a problem and wrote:

3,401.033 = 3 x 1,000 + 4 x 100 + 1 x 1 + 3 x 0.1 + 3 x 0.01

Critique Shayla's equation, explaining her strategy and correcting any mistakes.

Answer

8 A science class created and tested different paper airplanes.
Design A flew 12.04 meters, Design B flew 16.78 meters and Design C flew 12.404 meters.
Round each design's flight distance to the nearest tenth.

Design A	*Design B*	*Design C*

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9 The average adult horse weighs 1,400 pounds. The average squirrel weighs 1.4 pounds. Complete the statement.

On average, an adult horse is ⬚ times larger than a squirrel.

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10 For the Science Fair, Deeann and Nate are testing water filter designs.
Deeann's design can filter 13.321 ml of water each minute. Nate's design can filter 14.09 ml of water each minute.
Write two statements comparing the water filtered by each design.

⬚ > ⬚ and ⬚ < ⬚

Challenge Question!

In the comparisons below, each letter stands for a different digit. Find a value for each digit that makes BOTH comparisons true.

| a | . | e | f | > | n | . | t | r |

| r | . | a | m | < | r | . | r | e |

a	e	f	g	t	r	m

Answers

Question number	Question	Answers	Standard
1	Ashley writes the following equations: $1 \times 10^1 = 10$ $1 \times 10^2 = 100$ $1 \times 10^3 = 1{,}000$ Explain a place value pattern shown by Ashley's equations.	Each time a number is multiplied by 10 more, the product is 10 times the size. or Since place value positions increase by multiples of 10, for every power of 10 you multiply by the positions of the digit increase by 1. *Answers will vary, but should address a base 10 pattern.	5.NBT.A.2
2	The average adult cow weighs 1,400 pounds. The average chimpanzee weighs 140 pounds. Complete the statement. A chimpanzee is $\frac{?}{?}$ the size of an adult cow.	$\frac{1}{10}$	5.NBT.A.1
3	Each of the students in Mr. Liu's class has one of the following numbers: 59.023; 48.501; 43.056; 60.001; 47.998 They each read a statement about their number… Decide which student has each number.	Edison has 60.001 Justina has 43.056 Cheney has 47.998 Matt has 48.501 May has 59.023	5.NBT.A.4

Question number	Question	Answers	Standard
4	Virginia and Aleta are discussing the expression 130,000 ÷ 10⁵. Virigina says "The answer will be 50 times smaller than 130,000." Aleta says "No, the answer will be 100,000 times smaller than 130,000." Critique both responses - explaining what parts are correct and what parts are incorrect.	Aleta is correct, because 10^5 = 100,000 and dividing by this will decrease the place value of all digits 5 times. 10^5 is not 50, which was Viriginia's mistake. *Answers will vary, but should reflect base 10 place value understanding.	5.NBT.A.2
5	7.18 > 7.9 "Since they both have 7 ones, I looked at the decimal, and 18 is bigger than 9." Above is Brenden's work and his thinking. Critique his response, explaining what parts are correct and what parts are incorrect.	Brenden compared the largest position first, and since they were equal, he went to the smaller position, which is correct. However, he thought that 0.9 was just 9, when actually it's 90 tenths, which is bigger than 18 tenths. *Answers will vary, but should show decimal place value understanding.	5.NBT.A.3b
6	It snowed about 5.5 inches in Cedarville. If the actual inches were rounded to the nearest tenth, what are 3 possible depths it could have snowed?	Any 3 numbers from 5.45 to 5.54.	5.NBT.A.4

Word Problems | Grade 5 | Place Value and Rounding

Question number	Question	Answers	Standard
7	Shayla was solving a problem and wrote: 3,401.033 = 3 x 1,000 + 4 x 100 + 1 x 1 + 3 x 0.1 + 3 x 0.01 Critique Shayla's equation, explaining her strategy and correcting any mistakes.	Shayla is showing 3,401.033 in expanded form - by place value. Her whole number place values are correct. The decimals should be 3 x 0.01 and 3 x 0.001. Shayla's equation shows 33 hundredths, not 33 thousandths. *Answers will vary, but should identify the mistake and show decimal place value understanding.	5.NBT.A.3a
8	A science class created and tested different paper airplanes. Design A flew 12.04 meters, Design B flew 16.78 meters and Design C flew 12.404 meters. Round each design's flight distance to the nearest tenth.	Design A: 12 Design B: 16.8 Design C: 12.4	5.NBT.A.4
9	The average adult horse weighs 1,400 pounds. The average squirrel weighs 1.4 pounds. Complete the statement. On average, an adult horse is ? times larger than a squirrel.	1,000	5.NBT.A.1

Question number	Question	Answers	Standard
10	For the Science Fair, Deeann and Nate are testing water filter designs. Deeann's design can filter 13.321 ml of water each minute. Nate's design can filter 14.09 ml of water each minute. Write two statements comparing the water filtered by each design.	14.09 > 13.321 and 13.321 < 14.09	5.NBT.A.3b
Challenge Question	In the comparisons below, each letter stands for a different digit. Find a value for each digit that makes BOTH comparisons true. a.ef > n.tr r.am < r.re	a = 1 e = 6 f = 3 n = 0 t = 7 r = 8 m = 9 1.63 > 0.78 8.19 < 8.86 *Answers may vary but ensure comparisons are correct.	5.NBT.A.3b

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