

Tutor Doctor

Math 7: Number Sense and Numeration, 10 Questions

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1.



Justin is watching coverage of a space shuttle launch on TV.

The countdown clock shows the number of hours before the launch with negative integers, and the number of hours after launch with positive integers.

The clock currently reads -23:00 hours to launch countdown. In eight hours, the astronauts will begin preparations for the mission. What will the clock show then?

- A) -31:00
- B) 31:00
- C) 15:00
- D) -15:00

Incorrect. Your answer=A, Correct answer=D

Explanation:

This problem would be modeled using $(-23) + (+8)$ which gives -15.

2. The expression below that has the greatest result is:

- A) $(+4) - (+3)$
- B) $(-7) - (+4)$
- C) $(+6) - (-4)$
- D) $(-2) - (-5)$

Incorrect. Your answer=A, Correct answer=C

Explanation:

A has a value of +1
B has a value of -11
C has a value of +10
D has a value of +3

So, the largest result is answer C.

3. $19\frac{5}{18} + 16\frac{1}{3}$

A) $35\frac{5}{54}$

B) $35\frac{2}{7}$

C) $35\frac{4}{21}$

D) $35\frac{11}{18}$

E) $35\frac{5}{6}$

Incorrect. Your answer=A, Correct answer=D

Explanation:

$$19\frac{5}{18} + 16\frac{1}{3}$$

First rewrite both fractions as equivalent fractions with a common denominator of 18:

$$= 19\frac{5}{18} + 16\frac{6}{18}$$

Add the whole numbers ($19 + 16$), then add the numerators ($5 + 6$) and write their sum over 18:

$$= 35\frac{11}{18}$$

4. Winnie is attempting to solve the following equation:

$$\frac{6}{-4 + 4}$$

She finds that it cannot be solved. Why?

- A) You cannot divide by negative numbers
- B) The minus sign should be with the numerator (on the top), not with the denominator (at the bottom)
- C) You cannot divide 6 into 4 equal pieces
- D) The value of the denominator is zero and you cannot divide by zero

Incorrect. Your answer=A, Correct answer=D

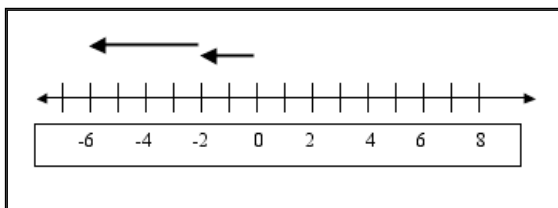
Explanation:

To solve this question, the equation that makes up the denominator must first be solved.

$$\frac{6}{-4 + 4} = \frac{6}{0}$$

The denominator is 0. A number cannot be divided by 0. This is impossible.

5. Which addition statement is represented by the number line?



- A) $(2) + (4) = (6)$
- B) $(-2) + (-4) = (-6)$

- C) $(0) + (6) = (6)$
 D) $(-2) + (6) = (4)$

Incorrect. Your answer=A, Correct answer=B

Explanation:

Both arrows point left, so they represent negative numbers.

The arrows end up at -6, and there is only one response that has that answer, B.

There is an arrow of length 2 and another of length 4, so the addition statement shown is $(-2) + (-4) = -6$

6. Use the numbers 4, 5, 8 and 9, only once, to replace the squares in:

$$\begin{array}{r} \square \quad \square \\ - \quad - \\ \hline \square \quad \square \end{array}$$

The BIGGEST difference would be created by:

- A) $\frac{8}{4} - \frac{5}{9}$
 B) $\frac{8}{9} - \frac{4}{5}$
 C) $\frac{5}{9} - \frac{4}{8}$
 D) $\frac{8}{4} - \frac{9}{5}$

Correct. Your answer=A, Correct answer=A

Explanation:

The number in the DENOMINATOR (bottom) of a fraction determines how many pieces you have divided a whole into. The more pieces you divide the whole into, the smaller the pieces.

For example, if you are sharing a pie with 4 people, you will get more than if you are sharing a pie with 10 people! $\frac{1}{4}$ of a pie is more than $\frac{1}{10}$ of a pie.

So, to MAXIMIZE the difference, you need to subtract the smallest fraction from the largest fraction possible. This is why answer A will produce the biggest difference.

Here are the possible differences:

$$\left\{ \frac{8}{4} - \frac{5}{9}, \frac{8}{9} - \frac{4}{5}, \frac{5}{9} - \frac{4}{8}, \frac{8}{4} - \frac{9}{5} \right\}$$

$$\left\{ \frac{13}{9}, \frac{4}{45}, \frac{1}{18}, \frac{1}{5} \right\}$$

And here are the sums sorted from least to greatest:

$$\left\{ \frac{1}{18}, \frac{4}{45}, \frac{1}{5}, \frac{13}{9} \right\}$$

7.

Substance	Boiling Point
Helium	-269°C
Toluene	111°C
Iron	2861°C
Tungsten	5900°C

According to the above table, how much cooler is the boiling point of helium than the boiling point of tungsten?

- A) 269°C
 B) 5900°C
 C) 5631°C
 D) 6169°C

Incorrect. Your answer=A, Correct answer=D

Explanation:

$$5900^{\circ}\text{C} - (-269^{\circ}\text{C}) = 5900^{\circ}\text{C} + 269^{\circ}\text{C} = 6169^{\circ}\text{C}$$

8. Paint costs \$26.75 per gallon. Randy needs 4 gallons of paint to paint his living room. If he has \$95.25 to spend on paint, how much of the living room will he be able to purchase paint for? Assume that you can buy any quantity of paint, not just a gallon at a time.

- A) 100%
- B) 89%
- C) 26.75%
- D) 107%

Incorrect. Your answer=A, Correct answer=B

Explanation:

4 gallons of paint, costing \$26.75 per gallon, equals \$107.00.

Randy only has \$95.25 to spend on paint.

To solve, divide the amount of money that Randy has by the amount of money that Randy needs, and multiply by 100.

$$95.25 \div 107 = 0.8901 \times 100 = 89\%$$

9. $\frac{9}{14} - \frac{1}{2} + \frac{3}{7} = \frac{a}{b}$,

where $\frac{a}{b}$ is a fraction in reduced form.

The value of a is:

- A) 3
- B) 4
- C) 5
- D) $\frac{4}{7}$
- E) $\frac{8}{14}$

Incorrect. Your answer=A, Correct answer=B

Explanation:

First we need to perform the indicated operations:

$$\frac{9}{14} - \frac{1}{2} + \frac{3}{7}$$

Rewrite the fractions with a common denominator (14):

$$\frac{9}{14} - \frac{7}{14} + \frac{6}{14}$$

Add and subtract the numerators and write the result over 14:

$$\frac{8}{14} \text{ which can be reduced to } \frac{4}{7} \text{ (by dividing the top and bottom by 2)}$$

Now, be sure to answer the actual question!!

$\frac{4}{7}$ is equivalent to $\frac{a}{b}$ and the question asked for the value of a , which is 4.

10. At the Winter Olympic games, 20% of the fans were cheering for Canadian athletes. What fraction of the fans were cheering for Canada?

- A) $\frac{1}{20}$
- B) $\frac{1}{4}$
- C) $\frac{1}{5}$
- D) $\frac{2}{1}$

Incorrect. Your answer=A, Correct answer=C

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