Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CFS for top quality work**

* + Problem is annotated for meaning
  + Number line represents situation
  + Expression is written from number line and evaluated using **estimation**
  + Expression is **evaluated and checked** against estimation

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

UNIT 1 LESSON 11

**AIM**: SWBAT apply properties of operations to add and subtract rational numbers to solve multi-step mathematical and real world problems

**THINK ABOUT IT!**

Maggie said that she could determine the answer to the problem below by just estimating the answer and comparing it to the given answer choices. Do you agree with Maggie? If so, explain and use estimation to prove she is correct. If not, explain and solve the problem to determine the actual answer.

Dominic jumped from a height of 14.3 feet above the surface of a pool. He traveled 18.7 feet straight down into the water. From there he traveled up 25.55 feet to the top of the biggest water slide at the pool. What is the height of the tallest waterslide?

1. -55.55
2. -29.55
3. 21.15
4. 55.55

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Key Point

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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a useful check when solving complex rational number problems |

**Interaction with New Material**

Ex. 1) Martin lost 28 ½ tablespoons of flours by accidently spilling it all over the floor. After he cleaned it up, he asked his neighbor if he could borrow some. The neighbor could only spare 18 ¾ tablespoons of flour. Martin took that and asked another neighbor who gave him 6 1/5 tablespoons. How much more will Martin need to replace the flour he spilled?

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**PARTNER PRACTICE**

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| *Bachelor Level* |

1. Richie is sitting on a dock, 5 ½ feet above the surface of the water. He dives down into the water, traveling 8 ¼ feet straight down. He then swims up to the surface of the water. How far will he swim up before he reaches the surface?

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1. A pilot in the military was practicing flight drills. Within a few minutes, his plane was at an altitude of 10,500 feet. He received a command and had to lower his altitude by 520.7 feet. At 374.35 feet above that altitude, he saw a small bird and waved to it. At what altitude did he see the bird?

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| *Master Level* |

1. Leon was getting ready for school and decided to check the weather forecast for the next day. The temperature yesterday was 12.4˚F. The weather forecaster said that today’s temperature was 14.67˚ lower than yesterday and that tomorrow’s temperature would be 5.08˚ lower than today. According to the weather forecaster, what will the temperature be tomorrow?

**INDEPENDENT PRACTICE**

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| *Bachelor Level* |

1. Ocean water freezes at -2 ½ degrees. Anti-freeze is a liquid used in cars that freezes at -67 degrees. If the current temperature is the same as the temperature that ocean water freezes, how much colder will it need to get to for anti-freeze to freeze.

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1. The average temperature for January in Whoville is -15°C. In February, the average temperature is 3°C colder. In March, the average temperature rises 5°C. And in April, the average temperature is 2°C warmer. What’s the average temperature in April?

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| *Master Level* |

1. Ms. Andrews’ bank account balance was -$41.72 at the end of April. In May, the size of her debt increased by $16.75. She wants her bank account to be positive $30.00 by the end of June. How much money will Ms. Andrews’ have to make?
2. Ms. Andrews’ was able to get her account to a positive $15.50 by the end of June, but did not meet her goal. How much money did she make? Explain how you determined your answer.
3. At the start of December, Kenji has a balance of $595.50 in his credit card statement. The following is a list of transactions he made during the month.

|  |  |  |
| --- | --- | --- |
| **Date** | **Transaction** | **Balance** |
| December 1 |  | -$595.50 |
| December 5 | Spends $19.95 on a DVD |  |
| December 12 | Spends $280.88 on a ticket to Chicago |  |
| December 15 | Pays $257.00 of his balance |  |
| December 17 | Purchases books for $58.12 |  |
| December 21 | Pays $50.00 of his balance |  |
| December 24 | Buys dinners for $17.50, $41.37, and $65.15 |  |
| December 26 | Pays $100.00 of his balance |  |
| December 31 | Pays $245.50 of his balance |  |

Work Space:

Step A: Complete the table.

Step B: What was Kenji’s credit card balance at the end of December?

Step C: When was his balance the greatest?

Step D: When was his balance the least?

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| *PhD Level* |

1. The table shows the profits or losses (in millions of dollars) earned by three companies from 1997 to 2006.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Company** | **‘97** | **‘98** | **‘99** | **‘00** | **‘01** | **‘02** | **‘03** | **‘04** | **‘05** | **‘06** |
| ***Sands Motor*** | -5.3 | -4.8 | -7.2 | -2.1 | 1.4 | 6.5 | 3.2 | -3.5 | 10.2 | 2.4 |
| ***Daily Trans*** | 6.0 | 3.4 | -5.8 | -12.3 | -20.3 | -1.5 | 2.5 | 9.8 | 19.4 | 32.1 |
| ***Sell to You*** | 120 | 98 | -20 | 40 | -5 | 85 | 130 | 76 | 5 | -30 |

Step A: List the range (highest and lowest) value for each company and the total profit or loss of each company from 1997 to 2006.

Sands - Range:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Total Profit/Loss:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Daily Trans - Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Total Profit/Loss:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sell to You - Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Total Profit/Loss:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Step B: Which company was the most successful? Least successful?

Step D: Looking at the data for all three companies, what was the most successful year? What

was the worst? Explain how you used the data to answer the question.

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Step E: Which company was the most consistent in their profits and loss? Determine this by finding the difference in the range of each company.

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**EXIT TICKET**

|  |  |  |  |
| --- | --- | --- | --- |
| Self-assessment | I mastered the learning objective today. | I am almost there. | Need more practice and feedback. |
| Teacher feedback | You mastered the learning objective today. | You are almost there. | You need more practice and feedback. |

1. Death Valley sits at an elevation of 212 ¾ feet below sea level and the temperature at noon is 119.5 degrees. Mt. Humphrey’s (the tallest point in Arizona) has an elevation of feet and the temperature at the top is -19.07 degrees. What is the change in elevation and temperature between the two locations?