

Write and evaluate an expression representing the problem :

1. A diver starts at an elevation of $-3\frac{4}{5}$ feet. He then descends $6\frac{3}{10}$ feet, makes another descent of $2\frac{1}{5}$ feet, and then makes a final descent of $4\frac{1}{10}$ feet. What is his final elevation ?

Step 1

Write an expression to represent the problem.

$$-3\frac{4}{5} - 6\frac{3}{10} - 2\frac{1}{5} - 4\frac{1}{10}$$

Step 2

Rewrite the expression as a sum.

$$-3\frac{4}{5} + (-6\frac{3}{10}) + (-2\frac{1}{5}) + (-4\frac{1}{10})$$

Step 3

Evaluate the expression.

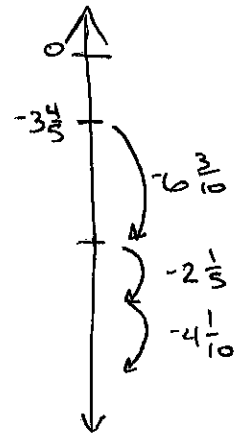
$3\frac{4}{5} = 3\frac{8}{10}$	$10\frac{1}{10} = 10\frac{1}{10}$
$+ 6\frac{3}{10} = 6\frac{3}{10}$	$+ 2\frac{1}{5} = 2\frac{2}{10}$
<hr style="width: 100%;"/>	<hr style="width: 100%;"/>
$-9\frac{11}{10} = -10\frac{1}{10}$	$-12\frac{3}{10}$

$$\begin{array}{r} 12\frac{3}{10} \\ + 4\frac{1}{10} \\ \hline -16\frac{4}{10} = -16\frac{2}{5} \end{array}$$

Step 4

Write the solution.

The divers final elevation is $-16\frac{2}{5}$ feet.



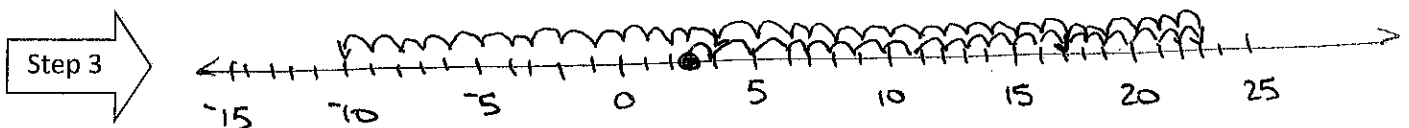
2. The temperature at a ski resort in Colorado was 3°C at 6 a.m.

- By noon, the temperature rose 14°F .
- From noon to 4 p.m., the temperature rose another 6°F .
- From 4 p.m. to 9 p.m., the temperature fell 19°F as a cold front moved in.
- From 9 p.m. to midnight, the temperature fell 14°F more.

What was the temperature at midnight ?

Step 1 $\rightarrow 3 + 14 + 6 - 19 - 14$

Step 2 $\rightarrow 3 + 14 + 6 + (-19) + (-14)$



$$3 + 14 = 17$$

$$17 + 6 = 23$$

$$23 + (-19) = 4$$

$$4 + (-14) = -10$$

Step 4 \rightarrow The temperature at midnight is -10°F .

3. Carly's dog, Rex, is five years old.

- At the end of his first year, Rex weighed 15.3 kilograms.
- By the end of his second year, he gained $4\frac{1}{5}$ kilograms.
- He lost $1\frac{7}{10}$ kilograms by the end of his third year.
- He lost $\frac{1}{2}$ kilogram the next year.
- In his fifth year, he gained 1.7 more kilograms

Write an expression that represents Rex's current weight and then determine his weight.

4. The temperature at a ski resort in Vermont was 5°F at 8 a.m.
- By noon the temperature rose 16°F .
 - From noon until 3 p.m., the temperature rose another 7°F .
 - From 3 p.m. until 9 p.m., the temperature fell 21°F as a snowstorm came in.
 - From 9 p.m. until midnight, the temperature fell 18°F more.

Write an expression representing the temperature changes from 8 a.m. until midnight and then determine the temperature at midnight.

5. A weather balloon is released at an elevation of $60\frac{1}{4}$ meters. Its elevation changes each hour after it is released. Ascents are represented using positive numbers and descents are represented using negative numbers. The table below shows the change in elevation at the end of each hour.

Hour	1	2	3	4
Elevation Change (meters)	$-8\frac{1}{2}$	-3.45	$4\frac{1}{4}$	9.55

Write an expression that represents the changes in elevation and then determine the elevation after 4 hours.

6. Val's checking account has a balance of - \$50. She deposits \$100 in her checking account and then writes a check for \$50. Write an expression to represent the checking account and then determine the balance in dollars after the check is cashed.

7. Pria has a rain gauge in her back yard. She started on Monday with $\frac{1}{4}$ inch of water in her gauge. On Tuesday, it rained an additional $2\frac{1}{2}$ inches. On Wednesday, the sun was very hot and she noticed that $\frac{1}{4}$ inch of the water had evaporated. On Thursday, there wasn't any rain and none of the water evaporated. On Friday, it rained $\frac{1}{2}$ inch. Write an expression that could be used to find the total amount of water that was in Pria's rain gauge on Friday and then determine the amount in the gauge.

Challenge: Philip is going on a 4000 mile road trip with three friends. The car consumes 3 gallons of gas per 100 miles, and gas costs \$2.50 per gallon.

If Philip and his friends want to split the cost of gas evenly, how much should they each pay?