

Answer completely and show all of your work.

The chart to the right shows the approximate tops of the layers of the atmosphere and zones of the ocean. (Note: the envelope of gas called the stratosphere would be from 20 km to 50 km above the Earth.)

Atmospheric Layer/Ocean Zone	Elevation (km)
Thermosphere	600
Mesosphere	90
Stratosphere	50
Troposphere	20
Bathypelagic	-2
Hadalpelagic	-7
Deepest Part of the Ocean	-11

1. a. Write a subtraction expression you can use to find the difference between the elevation of the top of the thermosphere and the deepest part of the ocean.

$$60 - (-11)$$

- b. Write your expression as an addition expression.

$$60 + 11$$

- c. Evaluate the expression.

$$71 \text{ km}$$

2. In which atmospheric envelope would you find the opposite of the top of the hadalpelagic zone in the ocean? Explain your choice.

Troposphere. According to the chart, Everything from sea/ground level to 20 km above the ocean is the Troposphere or 7 < 2

3. Find the difference between the elevations of the tops of each level.

- a. Mesosphere and Troposphere

$$90 - 20 = 70 \text{ km}$$

- b. Bathypelagic and Stratosphere.

$$-2 - 50 = -52 \therefore 52 \text{ km}$$

- c. Hadalpelagic and the deepest part of the ocean.

$$-7 - (-11) = -7 + 11 = 4 \text{ km}$$

4. How does the sum of the elevations of the Bathypelagic, Hadalpelagic, and the deepest part of the ocean compare to the top of the Troposphere?

$$-2 + -7 + -11 = -20 \text{ vs } 20 \text{ opposites (additive inverses)}$$

5. As you move upward through the lower three layers of the atmosphere, the air grows thinner and thinner. This causes the air temperature to grow colder and colder. An average temperature at the bottom of the troposphere might be  $65^{\circ}\text{F}$ . The temperature at the top of the mesosphere might be  $250^{\circ}\text{F}$  cooler than that. Find the colder temperature at the top of the mesosphere.

$$65 - 250 = -185^{\circ}\text{F}$$

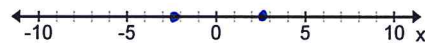
Answer completely and show all of your work.

1. Graph and identify each number and its opposite.

a. 6, -6



b. -2.5, 2.5



2. Write each absolute value.

a.  $|-17|$  17

b.  $|0|$  0

c.  $|+23|$  23

d.  $|-9|$  9

3. Compare each by providing a  $>$ ,  $<$ , or  $=$ .

a.  $-30 < -28$

b.  $2 > -7$

c.  $-1 > -18$

b.  $|-30| > |-28|$

b.  $|2| < |-7|$

c.  $|-1| < |-18|$

4. Find each sum.

a.  $3 + (-9)$  -6

b.  $-18 + 7$  -11

c.  $-13 + (-29)$  -42

d.  $-2 + 18$  16

e.  $16 + (-54)$  -38

f.  $-73 + (-5)$  -78

5. Find each difference.

a.  $3 - (-9)$  12

b.  $-18 - 7$  -25

c.  $-13 - (-29)$  16

d.  $-2 - 18$  -20

e.  $16 - 54$  -38

f.  $-73 - (-5)$  -68