1. Jessica went deep sea diving. She makes the first stop on her descent at 25 meters below the surface of the water. From that point she dives down further, stopping every 5 meters. If she makes 4 additional stops, which number represents her position, relative to the surface of the water?

A   45
B   20
C   −20
D   −45

2. The table below shows the deposits (+) and withdrawals (−) each week for a newly opened bank account with a starting balance of $100.

DEPOSITS AND
WITHDRAWALS

Week 1	+120
Week 2	−100
Week 3	+50
Week 4	p
Week 5	+200
Week 6	−100
Week 7	−25
Week 8	+50

Part A: What is the value of p if the account shows a zero balance after 4 weeks?

Part B: Using the value of p from part A, find the balance in the account after 8 weeks.

3. Which situation could be represented by the equation $-30 + 30 = 0$?

A   Rita bought a hat for $30. She then bought some headphones for $30.
B   Donna loaned $30 to her brother. He then paid her back $30 the next day.
C   Wen drove 30 miles to the library. She then drove 30 more miles to her college.
D   Mika filled a tank with 30 gallons of water. She then filled the tank with 30 more gallons.

4. Which combination of events results in a 0 effect to the situation?

A   Arnold owes his sister $4, and he borrows $4 more from her.
B   Amy earned 8 points during a game and then had 8 points deducted.
C   Alex deposits $75 into an account which previously had a balance of $75.
D   Alice stands at the twenty-yard line on a football field and then moves forward 20 feet.

5. Ben records the temperature in degrees Celsius each morning. At 8 a.m. the temperature was 3 degrees below zero. It rose 3 degrees by 10 a.m. Which equation shows the change in temperature from 8 a.m. to 10 a.m.?

A $3 + 3 = 6$
B $-3 + 3 = 0$
C $-3 + 3 = -6$
D $-3 - 3 = -6$

6. Which pair of quantities results in a net result of 0?

A   A person spent $5 and then found 5 quarters.
B   A price increased by 10% and then decreased by $10.
C   A temperature dropped 0.5° F and then warmed up by $\frac{1}{2}$° F.
D   A height dropped 15 feet below sea level and then descended 15 feet.

7. In which situation do opposite quantities NOT have a sum of zero?

A   Rena owes $65 to her brother. She then pays her brother $65. How much does Rena owe her brother now?
B   The temperature rises from 52°F to 60°F in the morning. It then drops 8°F in the afternoon. What was the change in temperature overall?
C   While playing a game, Gabe's score is multiplied by 3. On his next turn, his score is multiplied by -3. By how many points did Gabe's score change in both turns?
D   Sosa starts a hike at an altitude of 2,800 feet and climbs up to 4,000 feet. Then she hikes down 1,200 feet. What was her overall change in elevation during the hike?

8. $a < 0 < b$. Which sum must always equal 0?

A $\quad \dfrac{a}{b} + \dfrac{-a}{-b}$

B $\quad \dfrac{a}{b} + \dfrac{a}{-b}$

C $\quad \dfrac{a}{b} + \dfrac{b}{a}$

D $\quad \dfrac{a}{b} + \dfrac{b}{-a}$

9. A submarine dives to a depth of 538 feet below sea level (−538 feet) and then goes up 27 feet (+27 feet). What change in its depth will bring the submarine back to sea level (0 feet)?

A $\quad$ +511 feet
B $\quad$ −511 feet
C $\quad$ +565 feet
D $\quad$ −565 feet

10. Mariana starts her hike up a mountain at an altitude of 1,792 feet and climbs to an altitude of 4,360 feet. She then hikes back down the mountain. Which equation could represent the change in altitude during her hike?

A $\quad$ 4,360 ft − 1,792 ft = 2,568 ft
B $\quad$ 1,792 ft + 4,360 ft = 6,152 ft
C $\quad$ 1,792 ft + 2,568 ft − 2,568 ft = 1,792 ft
D $\quad$ 1,792 ft + 2,568 ft + 2,568 ft = 6,928 ft

11. Which situation results in a sum of zero?

A $\quad$ A car drove 58.6 miles north and then 58.6 miles west.
B $\quad$ A student paid $25 for a book and then sold it for $20.
C $\quad$ A student read 25 pages of a book and then read the next 25 pages of the book.
D $\quad$ A diver descended 23.5 feet in the ocean and then ascended 23.5 feet in the ocean.