Negative Numbers

7a. Kevin is learning about negative numbers.

He says,

> A worm is 3.5cm above ground level. If it digs down 8.5cm, and then wiggles back up 9cm, it will end up right back where it started.

Is Kevin correct? Explain why.

R

7b. Sydney is learning about negative numbers.

She says,

> The temperature in a fridge is 4.5°C. If it changes by 4°C and then by another 3°C, the answer will always be a 2-digit number with one decimal place.

Is Sydney correct? Explain why.

R

8a. Fill in the blanks using any 2-digit number so that each answer is between 5 and 10.

A.   -19.5   +   ☐   =   ☐

B.   -20.5   +   ☐   =   ☐

C.   -22   +   ☐   =   ☐

PS

8b. Fill in the blanks using any 2-digit number so that each answer is between 8 and 12.

A.   -17   +   ☐   =   ☐

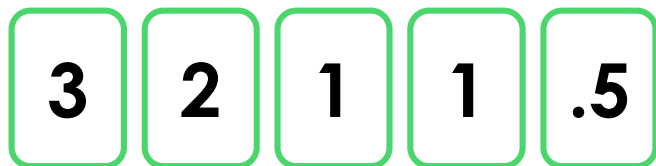B.   -9.5   +   ☐   =   ☐

C.   -12.5   +   ☐   =   ☐

PS

9a. Use the digit cards to create a calculation which equals -8.5.

| 3 | 2 | 1 | 1 | .5 |

You can only use each digit card once per calculation, but do not need to use all of them.

Is there more than one possible answer?

PS

9b. Use the digit cards to create a calculation which equals -20.5.

| 6 | 1 | 4 | 1 | .5 |

You can only use each digit card once per calculation, but do not need to use all of them.

Is there more than one possible answer?

PS

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Reasoning and Problem Solving – Negative Numbers – Year 6 Greater Depth

Reasoning and Problem Solving
Negative Numbers

Developing
1a. Jim is incorrect. He has added 4 to 5, not -5. The correct answer is -1.
2a. Various answers, for example:
A. -1 + 2 = 1
B. -3 + 4 = 1
C. -8 + 9 = 1
3a. 0 – 5, 3 – 8 or -5 – 0

Expected
4a. Ken is incorrect. Although he is correct by saying the temperature will be 5°C if it increases by 4°C, if it decreases by 4°C, it will be -3°C, not -5°C. 1 – 4 = -3
5a. Various answers, for example:
A. -17 + 19 = 2
B. -13 + 16 = 3
C. -18 + 20 = 2
6a. Various answers, for example:
0 – 18, 10 – 28, -21 + 3

Greater Depth
7a. Kevin is incorrect. The worm will end up 4cm above ground level, not 3.5cm. This is because 3.5 – 8.5 + 9 = 4.
8a. Various answers, for example:
A. -19.5 + 29 = 9.5
B. -20.5 + 26 = 5.5
C. -22 + 28 = 6
9a. Various answers, for example:
3.5 – 12, -11.5 + 3, 3 – 11.5

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Developing
1b. Mai is incorrect. She is starting at -5 and adding 5, not subtracting it. The correct answer is -10.
2b. Various answers, for example:
A. -7 + 9 = 2
B. -2 + 5 = 3
C. -5 + 9 = 4
3b. 2 – 10 or -10 + 2

Expected
4b. Tia is incorrect. She has added the two numbers and put a negative symbol in front of the answer, rather than subtracting them. Her answer should be -8 because 2 – 10 = -8.
5b. Various answers, for example:
A. -12 + 20 = 8
B. -20 + 29 = 9
C. -19 + 26 = 7
6b. Various answers, for example:
-15 – 1, 5 – 21, -21 + 5

Greater Depth
7b. Sydney is incorrect if the temperature decreases by these amounts. This is because 4.5 + 4 + 3 = 11.5, but 4.5 – 4 – 3 = -2.5.
8b. Various answers, for example:
A. -17 + 26 = 9
B. -9.5 + 19 = 9.5
C. -12.5 + 22 = 9.5
9b. Various answers, for example:
-14.5 – 6, -16.5 – 4, -16 – 4.5

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Reasoning and Problem Solving – Negative Numbers ANSWERS