Error Questions

1. A student's solution to a problem, to the nearest hundredth, is shown below. The solution is incorrect. Identify the errors. Provide a correct solution.

$(-8.2)^2 \div (-0.2) - 2.9 \times (-5.7)$

$= 67.24 \div (-0.2) - 2.9 \times (-5.7)$
$= 67.24 \div (-0.2) - 16.53$
$= 67.24 \div (16.73)$
~ 4.02

Answer: $\underline{(-8.2)^2} \div (-0.2) - 2.9 \times (-5.7)$

$\underline{67.24 \div (-0.2)} - 2.9 \times (-5.7)$

$-336.2 - \underline{2.9 \times (-5.7)}$

$-336.2 - 16.53$

-352.73

3. The following test question was marked out of 3. What mark would you give this student? Justify your answer.

Calculate: $\frac{-7}{8} - \frac{3}{4} \div \frac{1}{5} - \frac{1}{4}$

Student's Answer:

$$= \frac{-7}{8} - \frac{3}{4} \times \frac{1}{5} - \frac{1}{4}$$

$$= \frac{-7}{8} - \frac{3}{20} - \frac{1}{4}$$

$$= \frac{-7}{40} - \frac{3}{40} - \frac{1}{40}$$

$$= \frac{-11}{40}$$

The student might get 1/3. They knew they had to change the divide to a multiply but forgot to reciprocal the second fraction. They also knew they had to get common denominators but didn't use equivalent fractions and adjust the numerators too.

Correct Answer

$$\frac{-7}{8} - \frac{3}{4} \times \frac{5}{1} - \frac{1}{4}$$

$$= \frac{-7}{8} - \frac{15}{4} - \frac{1}{4}$$

$$= \frac{-7}{8} - \frac{30}{8} - \frac{2}{8}$$

$$= \frac{-39}{8}$$

2. Two students were asked to evaluate:

$$(-8) - 2(24 \div (-8))^2$$

Here are their calculations.

Student 1

$(-8) - 2(24 \div (-8))^2$

$= (-10)(24 \div (-8))^2$

$= (-10)(-3)^2$

$= (-10)(9)$

$= -90$

Student 2

$(-8) - 2(24 \div (-8))^2$

$= (-8) - 2(-3)^2$

$= (-8) - (-6)^2$

$= -8 - 36$

$= -44$

Why did both these students get incorrect answers? What is the correct answer?

Answer:

Student 1

$(-8) - 2(24 \div (-8))^2$

$= (-10)(24 \div (-8))^2$

$= (-10)(-3)^2$

$= (-10)(9)$

$= -90$

Student 2

$(-8) - 2(24 \div (-8))^2$

$= (-8) - 2(-3)^2$

$= (-8) - (-6)^2$

$= -8 - 36$

$= -44$

Student 1 subtracted first.
They didn't follow BEDMAS.

Student 2 multiplied 2 and 3 when they should have done the exponent next.

Correct Answer:

$(-8) - 2(24 \div (-8))^2$

$= (-8) - 2(-3)^2$

$= (-8) - 2(9)$

$= (-8) - 18$

$= -26$