1. Beneath the Earth's surface, the temperature increases $10°C$ every kilometer. Suppose that the surface temperature is $22°C$, and the temperature at the bottom of the gold mine is $45°C$. Write and solve an equation to find the depth of the mine. Round to the nearest tenth if needed. Define your variables.

EQ:

$$22 + 10k = 45$$
$$-22 \qquad -22$$
$$\frac{10k}{10} = \frac{23}{10}$$
$$k = 2.3$$

Variables. $k = $ # km of Depth

Solution: 2.3 km

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2. You want to rent a car for one day and have narrowed it down to two companies: Rent-a-Lemon and Drive-a-Wreck. Rent-a-Lemon charges you $45 a day plus $0.25 per mile.
Drive-a-Wreck charges you $60 a day plus $0.17 per mile.

a. Write an equation for each company. Use the following variables:
C = total charge m = # miles driven

Rent-a-Lemon Eq: Drive-a-Wreck Eq:

$$C = 45 + .25m \qquad C = 60 + .17m$$

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b. Set the two equations equal to each other and solve for m.

Rent-a-Lemon Eq: Drive-a-Wreck Eq:
$C = 45 + 0.25m$ $C = 60 + 0.17m$

$$45 + 0.25m = 60 + 0.17m$$
$$-0.17m \qquad\qquad -0.17m$$
$$45 + .08m = 60$$
$$-45 \qquad\qquad -45$$
$$\frac{.08m}{.08} = \frac{15}{.08}$$
$$m = 187.5 \text{ miles}$$

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c. What does this value of m represents?

If you drive 187.5 miles the two companies will charge you the same amount (EQUAL)