

Problem-Based Task: Piqued Interest

Coaching Sample Responses

- a. What formula should be used to create the equation?

The formula that should be used to create the equation is the interest formula $I = P \cdot r \cdot t$, where I is the interest, P is the principal (the amount of money originally invested), r is the interest rate, and t is the time in years.

- b. Which is the dependent variable, and which is the independent variable?

Principal and time are fixed amounts in this situation. The interest depends on the rate. Therefore, the rate is the independent variable (x), and the interest is the dependent variable (y).

- c. What equation can be written to describe the interest Randy will receive?

Start with $I = P \cdot r \cdot t$ and substitute x for r (the rate), y for I (the interest), 7,000 for P (the principal), and 1 for t (the time).

$$I = P \cdot r \cdot t$$

$$(y) = (7000)(x)(1)$$

$$y = 7000x$$

The equation $y = 7000x$ describes the interest he will receive depending on the rate.

- d. How much interest will Randy receive if he can find an interest rate of 5%?

In the equation $y = 7000x$, x is the rate and y is the interest. Substitute 5% for x and solve for y .

Recall that 5% must be converted to a decimal, which is equal to 0.05.

$$y = 7000x$$

$$y = 7000(0.05)$$

$$y = 350$$

If Randy invests the money at a rate of 5%, he will receive \$350 in interest.

- e. How much interest will Randy receive if he only gets an interest rate of 2%?

In the equation $y = 7000x$, x is the rate and y is the interest. Substitute 2% for x and solve for y .

Recall that 2% must be converted to a decimal, which is equal to 0.02.

$$y = 7000x$$

$$y = 7000(0.02)$$

$$y = 140$$

If Randy invests the money at a rate of 2%, he will receive \$140 in interest.

- f. How much more interest would Randy receive at a rate of 5% than 2%?

If Randy invests his money at a rate of 5%, he will receive \$350 in interest.

If he invests his money at a rate of 2%, he will receive \$140 in interest.

Subtract to determine the difference.

$$350 - 140 = 210$$

Randy would receive \$210 more in interest if he invested at a rate of 5% than if he invested at a rate of 2%.

Recommended Closure Activity

Select one or more of the essential questions for a class discussion or as a journal entry prompt.