MEDIA

The New York Times

'The Interview' Brings In $15 Million on Web

By MICHAEL CIEPLY DEC. 28, 2014

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LOS ANGELES — "The Interview" generated roughly $15 million in online sales and rentals during its first four days of availability, Sony Pictures said on Sunday.

Sony did not say how much of that total represented $6 digital rentals versus $15 sales. The studio said there were about two million transactions over all.

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exhibitors declined t

SundayReview | The Opinion Pages

OPINION
Is Algebra Necessary?

The New York Times were apparently unable to work out how much of the money Sony made came from sales and how much from rentals. However, there is enough information in their article to calculate it.

Form a system of simultaneous equations, using x to represent the number of rentals and y the number of sales.

Hence calculate the values of x and y, and from this work out how much money was raised through rentals, and how much through sales.

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SOLUTIONS

Let x represent the number of rentals. Let y represent the number of sales.

There were 2,000,000 transactions:

$$x + y = 2000000 \quad (1)$$

The total raised was $15,000,000, and each rental brought in $6, each sale brought in $15:

$$6x + 15y = 15000000 \quad (2)$$

Simplifying equation 2:

$$2x + 5y = 5000000 \quad (2^*)$$

Rearranging equation 1:

$$x = 2000000 - y \quad (1^*)$$

Substituting equation 1* into equation 2*:

$$2(2000000 - y) + 5y = 5000000$$

Simplifying:

$$4000000 - 2y + 5y = 5000000$$

$$4000000 + 3y = 5000000$$

$$3y = 1000000 \implies y = 333333.\dot{3} \quad (approx\ \mathbf{333,333\ sales})$$

Substituting into equation 1*:

$$x = 2000000 - 333333.\dot{3} = 1666666.\dot{6} \quad (approx\ \mathbf{1,666,667\ rentals})$$

Note: figures do not come out as whole numbers because the original values quoted in the article were approximate. These numbers will, however, be good enough to give an approximate answer to the questions asked.

Money earned through rentals: $6x = 6 \times 1666666.\dot{6} = \$\mathbf{10,000,000}$
Money earned through sales: $15y = 15 \times 333333.\dot{3} = \$\mathbf{5,000,000}$
In summary, one-sixth of the purchases were sales, which accounted for one-third of the income.