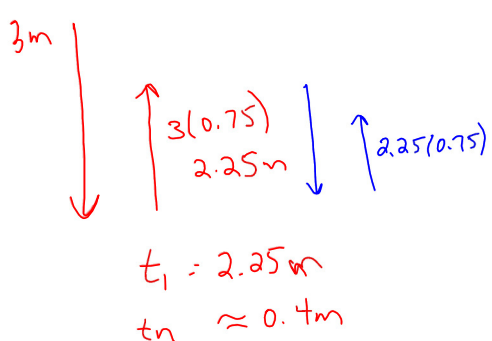


6. A ball is dropped from a height of 3 m. After each bounce it rises to 75% of its previous height. Determine after how many bounces the ball will reach a height of approximately 40 cm.



$$t_n = t_1 r^{n-1}$$

$$0.4 = 2.25(0.75)^{n-1}$$

$$0.17 = 0.75^{n-1}$$

$$0.75^6 = 0.75^{n-1}$$

$$6 = n-1$$

$$\therefore n = 7$$

\therefore 7 bounces to reach approx 0.4m or 40cm

7. In a geometric sequence the third term is 54 and the sixth term is -1458. Determine the values of t_1 and r .

$$t_6 = t_3 r^3$$

$$-1458 = 54 r^3$$

$$-27 = r^3$$

$$-3 = r$$

$$t_3 = t_1 r^{3-1}$$

$$54 = t_1 (-3)^2$$

$$54 = 9t_1$$

$$6 = t_1$$

use $t_n = t_1 r^{n-1}$

or $\frac{6}{t_1}, \frac{-18}{t_1}, \frac{54}{t_1}$

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