

Answer on Question #57603 – Math – Algebra

**Condition**

25 builders have completed 1/5 of a build in 8 days. The project leader then decides that the build now must be completed in 20 days. What is the smallest number of additional builders the project leader must hire to complete the build within the new schedule?

**Solution**

For time we will use constant t variable. For final amount of builders we will use x variable. Builders have completed 1/5 of a build, so they must build 4/5 of a build. We spent 8 days for building and we should finish project in 20 days, so we have 12 days to finish it.

We can build system of equations:

$$\begin{cases} 25 \cdot 8t = 1/5 \\ x \cdot 12t = 4/5 \end{cases}$$

$$8t = \frac{1}{5} \cdot \frac{1}{25}$$

$$8t = \frac{1}{125}$$

$$t = \frac{1}{125 \cdot 8} = \frac{1}{1000}$$

We put t value to second equation and try to find x:

$$x \cdot 12 \cdot \frac{1}{1000} = \frac{4}{5}$$

$$x = \frac{4 \cdot 1000}{5 \cdot 12} = \frac{400}{6} \approx 67 \text{ builders}$$

$$67 - 25 = 42 \text{ builders}$$

So, the project leader must hire 42 builders to complete the build within the new schedule.

**Answer**

42 people