

Proportional Relationships Starting Task

Begin with quantities and a claim

Try this before discussion. Show your reasoning. The data and student statements are fictional teaching examples.

1 A stated constant rate

An empty tank gains 12 liters of water in 4 minutes at a stated constant rate. In this model, find liters per minute and the water gained in 7 minutes. Name the units and the condition your prediction uses.

Your calculation and explanation

2 Equal increases

This different tank starts with water already inside. These are exact constructed values. Time means minutes since filling began; volume means all water in the tank, including the starting water.

Time (minutes)	Total water (liters)
0	5
1	8
2	11
4	17

Fictional learner Leila says, “The water increases by 3 liters each minute, so total water is proportional to time.” Do you agree? Use the starting pair or compare positive-time pairs to explain. If you divide, label the quotient and do not divide by zero.

Your evidence and conclusion

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3 A table and an unseen time

A different constructed record gives only these pairs. No starting amount, filling rule or later rate is supplied.

Time (minutes)	Water reading (liters)
1	3
2	6
4	12

Do the displayed pairs share one liters-per-minute quotient? Show more than one quotient. Does this record establish an exact reading at 6 minutes? Explain what you know, what remains unknown, and any assumption behind a prediction.

Displayed evidence and prediction limit