Rain on the Roof

Use rainfall data to predict water collection.

FSL.3B "Students will apply scientific literacy and thinking skills to analyze and interpret data found in various graphics including, but not limited to, those found in sample ACT science passages…"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Circle the rainfall depths in the table, then write the change in liters beside each pair of neighboring collection amounts to track the pattern.

A Tank for the Greenhouse

1. The school greenhouse needs water even when the weather is dry. Students propose catching rain from a small, flat section of its roof and storing it for later. The section has an area of 6 square meters. A rain gauge records rainfall depth in millimeters, and students predict how many liters of water could enter a tank.

2. The table shows a simplified model for four rainstorms. It assumes every drop that lands on the roof section reaches the collection pipe. In reality, wind can blow rain away, and some water can splash past the gutter. Keep those limits in mind when using the model to predict what could happen in another storm.

PREDICTED WATER COLLECTION

Rainfall (mm)	Water entering tank (L)
2	12
4	24
6	36
8	48

3. Read across each row to connect a rainfall depth with a collection amount. Compare rows to see whether equal changes in rainfall produce equal changes in water collected. A value between two listed rainfall depths calls for an estimate inside the table's range. A value beyond the listed depths requires a prediction that extends the pattern.

2 ANSWER WITH EVIDENCE

Use the passage

1. How much more water does the model predict for 6 mm of rain than for 2 mm?

2. Use the pattern to estimate how much water enters the tank after 5 mm of rain.

3. If the pattern continues, how much water would enter the tank after 9 mm of rain?

4. Suppose the tank can hold only 35 L and starts empty. After 8 mm of rain, how much water stays in the tank, and how much overflows?

3 YOUR TURN

Your own words

Using the same roof model, complete the table for rainfall depths of 1, 3, and 7 mm, in that order. Add one sentence explaining why real collection might differ from your predictions.

RAINFALL (MM)	PREDICTED COLLECTION (L)

Rain on the Roof

PART 1 · READ AND MARK

Circle the rainfall depths in the table, then write the change in liters beside each pair of neighboring collection amounts to track the pattern. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How much more water does the model predict for 6 mm of rain than for 2 mm?	**24 L more, since 36 L − 12 L = 24 L.**
2	Use the pattern to estimate how much water enters the tank after 5 mm of rain.	**30 L.**
3	If the pattern continues, how much water would enter the tank after 9 mm of rain?	**54 L.**
4	Suppose the tank can hold only 35 L and starts empty. After 8 mm of rain, how much water stays in the tank, and how much overflows?	**The tank holds 35 L, and 13 L overflows because the model predicts 48 L entering it.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

1 | 6
3 | 18
7 | 42

Actual collection may be smaller if some rain splashes past the gutter.

The model adds 6 L for each additional millimeter of rain. Accept any scientifically reasonable sentence about why actual collection could differ, such as wind or water missing the gutter.