

Puddle Problem Solvers

Use a model and data to explain a problem and choose a solution.

3.3.A “develop explanations and propose solutions supported by data and models;”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the numbers from the model, circle the sentence that explains the puddles, and number the proposed solution 1.

Why Does the Path Puddle?

- ① After rain, water often made puddles on the school garden path. A class wanted to explain why. They built three small tray models, each with a different ground surface. The students poured 100 milliliters of water into each tray and measured how much water soaked in after five minutes. Their results are shown in the table.

WATER TEST IN TRAY MODELS

Surface in model tray	Water soaked in after 5 minutes (mL)	Water left on top (mL)
Packed dirt	15	85
Loose soil	60	40
Mulch over loose soil	80	20

- ② In the packed-dirt tray, only 15 milliliters soaked in, so 85 milliliters stayed on top. The loose-soil tray absorbed more water. The mulch-over-soil tray absorbed the most. This model supports the explanation that hard, packed dirt has fewer open spaces for water. When little water soaks in, more water can stay on the path as a puddle.
- ③ The class proposed loosening the path soil and covering it with mulch. Their model data supports this solution because the mulch-over-soil tray had only 20 milliliters left on top. They will try the change in one small path section. After the next rains, they will measure puddle depth there and on an unchanged section to see whether the solution works.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Which two table values show that the most water stayed on packed dirt?

2 Use the model to explain why puddles form on the packed-dirt path.

3 What solution did the class propose? Which model data supports it?

4 What two places will the class measure after the next rains, and why?

3 YOUR TURN _____ Your own words

Choose a small classroom problem you can observe, such as pencils rolling off a table. Write four sentences that explain the problem with one count or measurement, describe a simple model or fair test, explain what the model data shows, and propose a solution supported by the data.

PART 1 • READ AND MARK

Underline the numbers from the model, circle the sentence that explains the puddles, and number the proposed solution 1. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Which two table values show that the most water stayed on packed dirt?	Only 15 mL soaked into packed dirt, and 85 mL stayed on top.
2	Use the model to explain why puddles form on the packed-dirt path.	Packed dirt has fewer open spaces, so little water soaks in. More water stays on top and can form a puddle.
3	What solution did the class propose? Which model data supports it?	They proposed loosening the soil and covering it with mulch. The mulch-over-soil tray had only 20 mL of water left on top.
4	What two places will the class measure after the next rains, and why?	They will measure puddle depth in the changed path section and an unchanged section to see whether the solution works.

PART 3 • YOUR TURN (SAMPLE ANSWER)

During one reading period, six pencils rolled off the supply table. In two trays holding ten pencils each, zero pencils rolled off the tray with a low edge, while four rolled off the tray without an edge. The model shows that an edge can keep pencils from rolling off. We should add a low edge to the supply table because the count and model data support that solution.

Accept answers that accurately use the passage data and connect the evidence to an explanation or solution. For Your Turn, accept reasonable classroom problems when the student includes a measurement or count, a comparison model or test, and a solution linked to the evidence.