LESSON MAKER PRO

Trial Data Detectives

Use repeated trials and means to compare investigation results.

GRADE 7 · TEKS 7.1

7.1 "Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions..."

NAME _____ DATE _____

FIND THE MEAN

A repeated-trial mean is found by adding all measurements and dividing by the number of trials. Keep the units with the mean. Compare mean values only when important conditions were kept the same.

WORKED EXAMPLE

Three trials measure a leaf's length as 14 mm, 16 mm, and 18 mm. Find the mean length.

1. Add the measurements: 14 mm + 16 mm + 18 mm = 48 mm.
2. Count the trials: 3.
3. Divide: 48 mm / 3 = 16 mm.

Answer: 16 mm

PRACTICE 6 problems

1 A student measures a pebble three times: 9 mm, 11 mm, and 10 mm. What is the mean length?

ANSWER _____

2 A timer records 22 s, 20 s, and 24 s for the same task. What is the mean time?

ANSWER _____

3 A balance measures the mass of a sample as 31 g, 33 g, and 32 g. What is the mean mass?

ANSWER _____

4 A temperature probe shows 25 °C, 27 °C, and 26 °C in repeated trials. What is the mean temperature?

ANSWER _____

5 A model car travels 12 cm, 15 cm, 13 cm, and 14 cm in four trials. What is the mean distance?

ANSWER _____

6 Group A measures plant height as 8 cm, 10 cm, and 9 cm. Group B measures plant height as 11 cm, 9 cm, and 10 cm. Find both means. Based only on the means, which group had taller plants?

ANSWER _____

APPLY IT Show your work

1 A student council tests two water-bottle refill settings. They use the same bottle and the same amount of water each time. Find the mean filling time for each setting. Which setting fills the bottle faster?

BOTTLE FILLING TRIALS

Setting	Trial 1	Trial 2	Trial 3
Low flow	28 s	30 s	29 s
High flow	24 s	26 s	25 s

ANSWER _____

2 A student tests reusable cold packs for a lunch box. Each trial begins with the same lunch box temperature and lasts 10 minutes. The table shows how much the temperature rises. Find the mean temperature rise for each pack. Which pack keeps the lunch box cooler?

LUNCH BOX TEMPERATURE RISE

Cold pack	Trial 1	Trial 2	Trial 3
Pack A	3 °C	5 °C	4 °C
Pack B	2 °C	4 °C	3 °C

ANSWER _____

CHALLENGE One step up

A design team tests a model ramp several times. Three distances are 7 cm, 9 cm, and 8 cm. One distance is x cm. The mean distance for all four trials is 8 cm. Find x and explain your reasoning.

WORK SPACE AND ANSWER

ANSWER KEY

Trial Data Detectives

GRADE 7 · TEKS 7.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A student measures a pebble three times: 9 mm, 11 mm, and 10 mm. What is the mean length?	**10 mm**
2	A timer records 22 s, 20 s, and 24 s for the same task. What is the mean time?	**22 s**
3	A balance measures the mass of a sample as 31 g, 33 g, and 32 g. What is the mean mass?	**32 g**
4	A temperature probe shows 25 °C, 27 °C, and 26 °C in repeated trials. What is the mean temperature?	**26 °C**
5	A model car travels 12 cm, 15 cm, 13 cm, and 14 cm in four trials. What is the mean distance?	**13.5 cm**
6	Group A measures plant height as 8 cm, 10 cm, and 9 cm. Group B measures plant height as 11 cm, 9 cm, and 10 cm. Find both means. Based only on the means, which group had taller plants?	**Group A: 9 cm. Group B: 10 cm. Group B had the taller plants.**

PART 2 · APPLY IT

1. **Low flow mean: 29 s. High flow mean: 25 s. High flow fills the bottle faster.** Add each row's three times and divide each total by 3. The smaller mean time is the faster setting.
2. **Pack A mean rise: 4 °C. Pack B mean rise: 3 °C. Pack B keeps the lunch box cooler.** Find each mean temperature rise by adding the three rises and dividing by 3. The pack with the smaller rise keeps the lunch box cooler.

CHALLENGE

x = 8 cm. A mean of 8 cm for four trials requires a total of 32 cm. The known distances total 24 cm, so the missing distance is 8 cm.

Accept equivalent addition and division work that gives the stated means with correct units. For the challenge, accept a clear explanation that the total for four trials must be 32 cm and the known total is 24 cm.