LESSON MAKER PRO

Precision in Practice

Report measured totals without claiming more accuracy than the measurements allow.

HIGH SCHOOL · MT.PLUS.ALG.MOD.4

MT.PLUS.ALG.MOD.4 "Choose a level of accuracy appropriate to limitations on measurement when reporting quantities in modeling situations."

NAME _____ DATE _____

CHOOSE THE PLACE

When you add or subtract measurements, calculate first. Then round your result to the place of the least precise measurement. The reported result is an estimate, not an exact total.

WORKED EXAMPLE

A cord measures 6.7 cm to the nearest tenth of a centimeter. Another measures 4.12 cm to the nearest hundredth. Report their total length.

1. Add: 6.7 + 4.12 = 10.82 cm.
2. The least precise measurement is to the nearest tenth.
3. Round 10.82 cm to the nearest tenth.

Answer: 10.8 cm

PRACTICE 6 problems

1 One strip measures 12.6 cm to the nearest tenth. Another measures 7.83 cm to the nearest hundredth. Report their total length.

ANSWER _____

2 A path measures 8.47 m to the nearest hundredth. A section measuring 2.1 m to the nearest tenth is closed. Report the remaining length.

ANSWER _____

3 Three packages have measured masses of 4.2 kg, 3.34 kg, and 1.7 kg. Each reading is to its last shown digit. Report their total mass.

ANSWER _____

4 Two measured clips last 48 s and 2.6 s. Each reading is to its last shown digit. Report their combined duration.

ANSWER _____

5 A cable measures 14.06 m. A measured length of 0.9 m is cut off. Each reading is to its last shown digit. Report the length left.

ANSWER _____

6 Two route sections measure 2.8 km and 1.46 km, each to its last shown digit. Report the total distance and explain why 4.26 km claims too much precision.

ANSWER _____

APPLY IT Show your work

1 Your phone estimates three sections of a route to a concert as 1.8 km, 0.76 km, and 2.3 km. Each estimate is rounded to its last shown digit. What distance should you report for the full route? Explain your choice of accuracy.

WORK SPACE

ANSWER _____

2 A phone reports data use of 1.7 GB for videos, 0.83 GB for music, and 2.4 GB for games. Each reading is rounded to its last shown digit. Report the total at an appropriate accuracy. Do these readings prove that use stayed under a 5 GB cap? Explain.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two boards measure 8.4 m to the nearest tenth and 3.27 m to the nearest hundredth. Report their total at an appropriate accuracy. Could their actual total round to 11.6 m to the nearest tenth instead? Give one possible pair of actual lengths to support your answer.

WORK SPACE AND ANSWER

ANSWER KEY

Precision in Practice

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	One strip measures 12.6 cm to the nearest tenth. Another measures 7.83 cm to the nearest hundredth. Report their total length.	**20.4 cm**
2	A path measures 8.47 m to the nearest hundredth. A section measuring 2.1 m to the nearest tenth is closed. Report the remaining length.	**6.4 m**
3	Three packages have measured masses of 4.2 kg, 3.34 kg, and 1.7 kg. Each reading is to its last shown digit. Report their total mass.	**9.2 kg**
4	Two measured clips last 48 s and 2.6 s. Each reading is to its last shown digit. Report their combined duration.	**51 s**
5	A cable measures 14.06 m. A measured length of 0.9 m is cut off. Each reading is to its last shown digit. Report the length left.	**13.2 m**
6	Two route sections measure 2.8 km and 1.46 km, each to its last shown digit. Report the total distance and explain why 4.26 km claims too much precision.	**4.3 km. The 2.8 km reading is only to the nearest tenth, so the total should be rounded to tenths.**

PART 2 · APPLY IT

1. **4.9 km. The route includes distances measured to the nearest tenth, so report the total to the nearest tenth.** Add 1.8 + 0.76 + 2.3 = 4.86 km, then round to the nearest tenth.
2. **4.9 GB. No, the readings do not prove use stayed under 5 GB. Actual amounts of 1.74 GB, 0.834 GB, and 2.44 GB match the readings but total 5.014 GB.** The displayed amounts total 4.93 GB, which rounds to 4.9 GB. Because each displayed amount is rounded, possible actual amounts can add to more than 5 GB.

CHALLENGE

The reported total is 11.7 m. Yes. Actual lengths of 8.36 m and 3.266 m match the two measurements and total 11.626 m, which rounds to 11.6 m.

Accept equivalent explanations that identify the least precise decimal place. For the challenge, accept any valid pair of actual lengths that rounds to the stated measurements and has a total that rounds to 11.6 m.