LESSON MAKER PRO

Rational Route Planner

Convert, calculate, estimate, and check.

GRADE 7 · 7.NR.1.11

7.NR.1.11 "Solve multi-step, contextual problems involving rational numbers, converting between forms as appropriate, and assessing the reasonableness of answers using mental computation and estimation strategies."

NAME _____ DATE _____

CHOOSE A USEFUL FORM

Choose fractions or decimals based on which form makes the calculation easier. Estimate with friendly numbers first, then calculate exactly and decide whether your answer makes sense.

WORKED EXAMPLE

Find 1.2 + 1/4.

1. Write 1.2 as 6/5.
2. Use a denominator of 20: 6/5 + 1/4 = 24/20 + 5/20.
3. Add: 29/20 = 1 9/20.

Answer: 1 9/20

PRACTICE 6 problems

1 Estimate, then find: 3/5 + 0.7

ANSWER _____

2 Estimate, then find: 2.5 - 7/10

ANSWER _____

3 Estimate, then find: -1.75 + 2/3

ANSWER _____

4 Estimate, then find: 4/9 ÷ 0.2

ANSWER _____

5 Estimate, then find: (-5/12)(1.8)

ANSWER _____

6 A team has 1.5 liters of water. It uses 2/3 of the water, then adds 0.25 liter. How much water does the team have now?

ANSWER _____

APPLY IT Show your work

1 Jordan has $28 for online game items. A game expansion costs $15, but it is 2/5 off. Jordan also buys an avatar for $2.75. Estimate, then find how much money Jordan has left.

WORK SPACE

ANSWER _____

2 A student has 5 1/2 GB of free storage on a tablet. They download 3 video clips that each use 0.75 GB, then delete files that free 1 2/5 GB. Estimate, then find the free storage now.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A tablet has 3.6 GB of free storage. A game uses 5/6 of that free storage, then the student deletes files that free 0.45 GB. How much free storage is left? Explain why an estimate of about 1 GB is reasonable.

WORK SPACE AND ANSWER

ANSWER KEY

Rational Route Planner

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Estimate, then find: 3/5 + 0.7	**A reasonable estimate is 1. Exact answer: 1.3.**
2	Estimate, then find: 2.5 - 7/10	**A reasonable estimate is 2. Exact answer: 1.8.**
3	Estimate, then find: -1.75 + 2/3	**A reasonable estimate is -1. Exact answer: -13/12, or -1 1/12.**
4	Estimate, then find: 4/9 ÷ 0.2	**A reasonable estimate is 2. Exact answer: 20/9, or 2 2/9.**
5	Estimate, then find: (-5/12)(1.8)	**A reasonable estimate is -1. Exact answer: -3/4, or -0.75.**
6	A team has 1.5 liters of water. It uses 2/3 of the water, then adds 0.25 liter. How much water does the team have now?	**0.75 liter**

PART 2 · APPLY IT

1. **A reasonable estimate is $16. Exact answer: $16.25.** Find the discount first: 2/5 of $15 is $6, so the expansion costs $9. Jordan spends $11.75 total, and $28 - $11.75 = $16.25.
2. **A reasonable estimate is 4.5 GB. Exact answer: 4.65 GB.** The clips use 3 × 0.75 = 2.25 GB, and 1 2/5 GB equals 1.4 GB. Compute 5.5 - 2.25 + 1.4 = 4.65 GB.

CHALLENGE

1.05 GB. Since 5/6 of 3.6 GB is 3 GB, compute 3.6 - 3 + 0.45 = 1.05 GB. This is about 1 GB, so the estimate is reasonable.

Accept equivalent fractions, decimals, and mixed numbers. Accept nearby reasonable estimates when the exact calculation and the reasonableness check are correct.