LESSON MAKER PRO

Scores and Shifts

Calculate with rational numbers, then check by estimating.

GRADE 7 · 7A.AF.C.17

7A.AF.C.17 "Solve multi-step real-world and mathematical problems involving rational numbers (integers, signed fractions, and decimals), converting between forms as needed..."

NAME _____ DATE _____

CALCULATE, THEN CHECK

Write an expression for each change, and follow the order of operations. Convert fractions and decimals to the same form when needed. Estimate to check whether your exact answer has a reasonable sign and size.

WORKED EXAMPLE

A game score starts at -3.8 points. You earn 1.7 points in each of 2 rounds, then lose 0.9 point. What is the final score?

1. Estimate: -4 + 2(2) - 1 = -1, so expect a score near -1.
2. Points earned: 2(1.7) = 3.4.
3. Score before the loss: -3.8 + 3.4 = -0.4.
4. Final score: -0.4 - 0.9 = -1.3.

Answer: -1.3 points

PRACTICE 6 problems

1 Calculate: -7 + 3(1.5) - 1/2.

ANSWER _____

2 Calculate: 5/6 - 1/3 + (-1/4).

ANSWER _____

3 Calculate: 4.2 - 2(1.35) - 0.8.

ANSWER _____

4 Calculate: (-3/4 + 1/8) ÷ 5/4.

ANSWER _____

5 Calculate: (-9.6 + 4.8) ÷ 0.6.

ANSWER _____

6 Calculate 6.1 - 3(2/5) - 0.7. Give a whole-number estimate to check your answer.

ANSWER _____

APPLY IT Show your work

1 You owe $6.50 for a group snack order. You pay back $2.25 on each of 3 days, then borrow $0.25 more. Treat debt as negative. What is your final balance? Estimate to check.

WORK SPACE

ANSWER _____

2 Before an outdoor practice, the temperature is -2.5°C. It rises 1 3/4°C each hour for 4 hours, then falls 0.8°C. What is the final temperature? Estimate to check.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A game score starts at -5/4 points. You earn 0.65 point in each of 6 rounds, then lose 1 1/2 points as a penalty. A player claims the final score is -2 points. Is that reasonable? Find the exact score and use an estimate to explain.

WORK SPACE AND ANSWER

ANSWER KEY

Scores and Shifts

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Calculate: -7 + 3(1.5) - 1/2.	**-3**
2	Calculate: 5/6 - 1/3 + (-1/4).	**1/4**
3	Calculate: 4.2 - 2(1.35) - 0.8.	**0.7**
4	Calculate: (-3/4 + 1/8) ÷ 5/4.	**-1/2**
5	Calculate: (-9.6 + 4.8) ÷ 0.6.	**-8**
6	Calculate 6.1 - 3(2/5) - 0.7. Give a whole-number estimate to check your answer.	**4.2; 6 - 3(0.4) - 1 is about 4.**

PART 2 · APPLY IT

1. **$0.00; an estimate is -$7 + $7 - $0 = $0.** Calculate -6.50 + 3(2.25) - 0.25 = -6.50 + 6.75 - 0.25 = 0.00. The estimate is also near zero.
2. **3.7°C; an estimate is -3 + 4(2) - 1 = 4°C.** Convert 1 3/4 to 1.75, then calculate -2.5 + 4(1.75) - 0.8 = 3.7°C. The estimate of 4°C is close.

CHALLENGE

No. The exact score is -5/4 + 6(0.65) - 1 1/2 = -1.25 + 3.9 - 1.5 = 1.15 points. An estimate of -1 + 4 - 2 = 1 is positive, so -2 points is not reasonable.

Accept equivalent fractions or decimals for exact answers. Estimates may vary if they support the stated conclusion.