NS7-44 Estimating Decimal Sums and Differences

1. a) Estimate the sum or difference using the whole number parts of the decimals.

Example: For $32.456 + 6.71 + 0.253$, estimate $32 + 6 + 0 = 39$.
So the sum is close to 39.

i) $2.785 + 3.76 + 20.4 \approx$ ____ + ____ + ____ = ____

ii) $12.348 - 4.97 \approx$ ____ − ____ = ____

iii) $12.75 + 10.603 + 0.24 \approx$ ____ + ____ + ____ = ____

iv) $562.403 - 140.624 \approx$ ____ − ____ = ____

b) Now calculate the sums and differences. Use your estimates to check your calculations.

Example: On a calculator, $32.456 + 6.71 + 0.253 = 39.419$.
This is close to 39, as expected.

i) $2.785 + 3.76 + 20.4 =$ _____. Is this close to your estimate from part a)? _____

ii) $12.348 - 4.97 =$ _____. Is this close to your estimate from part a)? _____

iii) $12.75 + 10.603 + 0.24 =$ _____. Is this close to your estimate from part a)? _____

iv) $562.403 - 140.624 =$ _____. Is this close to your estimate from part a)? _____

2. a) Estimate by rounding to the nearest tenth.

Example: For $2.877 + 3.62$, you could estimate $2.9 + 3.6$.
So the sum is approximately 6.5.

i) $0.769 - 0.35 \approx$ ____ − ____ = ____

ii) $25.08 + 0.004 + 4.53 \approx$ ____ + ____ + ____ = ____

iii) $3.25 + 2.67 + 0.48 \approx$ ____ + ____ + ____ = ____

iv) $5.467 - 2.78 \approx$ ____ − ____ = ____

b) Calculate the sums and differences in part a) using a calculator.
Use your estimates to check your calculations.

3. a) Estimate by using the digits of the two highest place values.

Examples: **3.2**85 − **0.7**6 ≈ 3.2 − 0.7 = 2.5
0.**54**6 + 0.**06**7 ≈ 0.54 + 0.06 = 0.60

Put zeros in the other places if you need to.
4 356.75 + **6 7**40.39 ≈ 4 300 + 6 700 = 11 000

i) $9.182 + 1.868 \approx$ ____ + ____ = ____

ii) $3.29 + 2.547 + 4.166 \approx$ ____ + ____ + ____ = ____

iii) $0.239 - 0.147 \approx$ ____ − ____ = ____

iv) $685.6 - 479.2 \approx$ ____ − ____ = ____

b) Calculate the sums and differences in part a) using a calculator.
Use your estimates to check your calculations.

For greater numbers, you can estimate by rounding to the nearest 10, 100, or 1 000.

Examples: $453.56 + 38.027 \approx 450 + 40 = 490$

$8\,739.57 - 2\,476.82 \approx 8\,700 - 2\,500 = 6\,200$

4. a) Estimate by rounding to the nearest 10, 100, or 1 000.

i) $7\,652.73 + 6\,281.56 \approx$ ____ + ____ = ____

ii) $341.8 + 756.4 + 523.9 \approx$ ____ + ____ + ____ = ____

iii) $753.8 - 684.2 \approx$ ____ − ____ = ____

iv) $5\,416.347 - 4\,675.096 \approx$ ____ − ____ = ____

b) Calculate the sums and differences in part a) using a calculator. Use your estimates to check your calculations.

5. a) Use the three methods in Questions 1 to 3 to estimate $4.768 + 5.385$.

b) Calculate $4.768 + 5.385$.

c) Which methods give the closest estimate? _____

For the problems below, estimate the solution before calculating.

6. Anika wants to buy three items that cost \$15.79, \$12.25, and \$37.50. If she has \$65 with her, does she have enough money to buy all three items?

7. Mercury is 57.6 million km from the Sun. Earth is 148.64 million km from the Sun. How much farther from the Sun is Earth than Mercury?

8. The average temperature in Jakarta is 30.33°C and, in Toronto, it is 11.9°C. How many degrees warmer is Jakarta than Toronto, on average?

9. Each wing of a butterfly is 3.72 cm wide. Its body is 0.46 cm wide. How wide is the butterfly?

10. John cut 2.73 m off a 10-m rope. Thomson cut another 4.46 m off. How much rope was left?

11. a) A slice of cheese pizza has 4.838 g of saturated fat, 2.802 g of monounsaturated fat, and 1.765 g of polyunsaturated fat. What is the total amount of fat?

b) A slice of pepperoni pizza has 4.995 g of saturated fat, 3.857 g of monounsaturated fat, and 1.953 g of polyunsaturated fat. What is the total amount of fat?

c) How much less fat does the cheese slice have than the pepperoni slice?

12. Suppose you had \$755.50 and spent \$326.87. If you were shopping, which of the methods from Questions 1-3 would you use to estimate how much money you have left? Explain your choice.

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