

Understand and Apply

1. When the cashier rung up Constantine's purchase of a \$29.99 bicycle helmet and a \$15.99 U-lock, the cash register totaled \$55.98. How did Constantine use estimation to decide that the cashier had made an error?

2. **a)** Max is saving up for a Vancouver Grizzlies backboard that costs \$64.99. So far, he has saved \$52.75.

Approximately how much more money does he need?

b) What strategy did you use to make your estimation?

c) What other strategies might you have tried?

d) Are some strategies more appropriate for addition? for subtraction? Explain.

3. Melina bought a set of wrist and knee guards that regularly costs \$24.99 but was on sale for \$22.49. About how much did she save?

4. Estimate, then explain your choice of strategy.

a) $\begin{array}{r} \$16.56 \\ 7.25 \\ 9.89 \\ 10.49 \\ + 18.75 \end{array}$

b) $\begin{array}{r} \$469.95 \\ 499.99 \\ + 1255.00 \end{array}$

c) $\begin{array}{r} \$62.50 \\ - 3.92 \end{array}$

d) $\begin{array}{r} \$1.07 \\ - 0.85 \end{array}$

5. When Chetan estimated the sum for Problem 4 (a), he rounded some numbers up and other numbers down. Explain his thinking.

6. Predict which of these sums will be less than 7.0 by estimating the highest possible answer.

a) $1.9 + 1.9 + 1.9 + 1.9$ **b)** $4.26 + 3.01$

c) $2.1 + 1.9 + 1.8 + 1.1$ **d)** $3.49 + 3.49$

7. Estimate which of these will have differences greater than 16.05.

a) $57.8 - 24.2$

b) $8.46 - 0.78$

c) $32.5 - 16.5$

d) $179.7 - 150.7$

8. Choose the closest estimate. Explain your thinking.

a) $49.6 + 32.7$

60, 70, 80, 90

b) $12.3 - 6.9$

4, 5, 6, 7

c) $1.7 + 6.8 + 9.3 + 15.7$

20, 30, 40

9. Which of these would be reasonable estimates for $214.2 + 307.4 + 11.9$? Why?

a) 532

b) 511

c) 500

d) 531

10. How might someone have made each estimate in Problem 9?

11. An insect's body is 3.62 cm long. Its antennae are 7.05 cm long. Estimate the insect's total length.

12. Sometimes it helps to think of a range of numbers into which your answer will fall. For example, Deepa rounded down to find the cost of the in-line skates and protective equipment; Stavros rounded up. The total cost will fall between the highest and lowest estimate. Estimate the range into which the sum of $9.5 + 3.8 + 9.5 + 8.2 + 7.0$ will fall. Then, use a calculator to check.

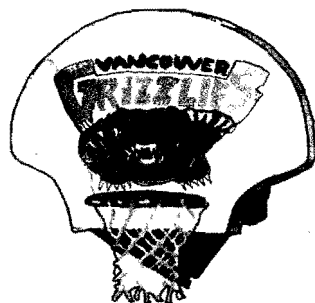
13. Use estimation to determine which of the following will fall between 30 and 35.

a) $41.6 - 10.3$

b) $14.2 + 7.6 + 7.0$

c) $60.35 - 28.47$

d) $10.4 + 9.5 + 6.4 + 12.2$



In Your Journal

Which estimation method is your favorite? Explain why it is your favorite. Include one example of how you could use your method in a practical situation.

Understand and Apply



1. In 1968, East German, Roland Matthes became the first swimmer to complete the 100-m backstroke in less than 1 min. His time was 58.7 s.
- Estimate and then calculate how much faster Mark Tewksbury swam the 100-m backstroke.
 - How could you rewrite 58.7 s to make it easier to subtract 53.98 s?

2. Estimate, then calculate.

- | | | |
|------------|------------|-------------|
| a) 3.000 | b) 0.850 | c) 243.36 |
| $- 1.027$ | $- 0.783$ | 71.10 |
| | | $+ 106.50$ |
| d) 5.86 | e) 0.750 | f) 4.653 |
| $- 2.94$ | $+ 0.463$ | $- 2.330$ |

3. Calculate.

- $9.83 + 12.7 + 18.634$
- $71.561 - 69.009$
- $8.0 - 1.58$
- $1.83 + 0.941 + 2.057$

4. Is it easier to add and subtract in vertical or horizontal form? Why?

5. Find the missing number.

- $3.90 + \blacksquare = 24.60$
- $32.682 - \blacksquare = 30.832$
- $61.3 + \blacksquare + 61.3 = 130.6$
- $0.746 - \blacksquare = 0.373$

6. The following are a gymnast's scores for six different events. What was the gymnast's total score for the tournament?

9.1 8.7 8.0 7.8 8.5 8.9

7. A car's odometer reads 9999.9 km. What will it read in 0.2 km?



8. A car's odometer reads 25 052.6. After a trip, it reads 29 621.8. Estimate, then calculate how many kilometres were travelled. How did your estimate help you decide if your answer was reasonable?

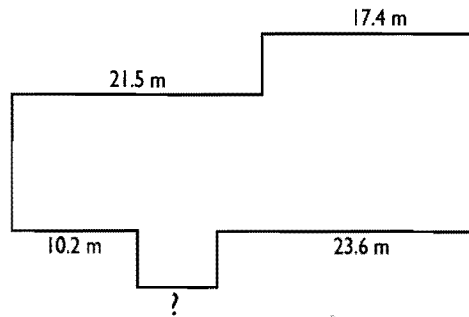
W/E

- Bob's mass is 38.20 kg. He rides a bicycle carrying a pack with a mass of 2.17 kg. What is the total mass that the bicycle is carrying?
- A cat stayed overnight in a veterinary hospital. Her medicine cost \$20.75, her needle was \$35.50, and her board was \$9.00 per day. Estimate the bill, then calculate.

11. a) Find the missing length.

b) What does this calculator keying sequence do?

C 21.5 $+$ 17.4 $-$ 10.2 $-$ 23.6 $=$



12. How much of 1 m³ of air is dust, moisture, and other gases?

1 m ³ of Air	
Oxygen	0.21 m ³
Nitrogen	0.78 m ³
Argon	0.0094 m ³
Carbon Dioxide	0.0003 m ³
Dust, Moisture, and Other Gases	?

13. In a magic square, all rows, columns, and diagonals have the same sum. Complete this magic square.

	4.34	6.34
	5.94	
5.54		4.74

In Your Journal

Why is it important to line up the decimal points when you add or subtract vertically? Give examples to support your opinion.