

1.5: Use Problem Solving Strategies and Models

“I WILL ...

Solve problems using verbal models.”

I. Steps

- A. Understand the question
- B. Translate the problem
- C. Solve the question
- D. Check your answer

II. Model Problems

Ex 1: The train travels between Boston and Washington, a distance of 457 miles. The trip takes 6.5 hours. What is the average speed?

Ex 2: In a theater, there are certain rows and different seats. In row 1, there are 12 seats. In row 2, there are 14 seats. In row 3, there are 16 seats. In row 4, there are 18 seats. Write an equation and determine how many seats are needed in the 10th row.

Your Turn: A paramotor is a parachute propelled by a fan-like motor. The table shows the height h of a paramotorist t minutes after beginning a descent. Find the height of the paramotorist after 7 minutes.

<p>Ex 3: The Long-Distance telephone plan charges 8 cents per minute for weekday, daytime calls, and 5 cents per minute for weekend calls. If the total is 220 minutes of long-distance calls during one billing cycle and the bill was \$13.16, not including taxes and fees, how many minute of night and weekend calls can be made?</p>	<p>Your Turn: A monthly cell phone charges \$5.00 for the first 300 text messages used and \$0.15 for each additional message. On this plan, what is the number of text messages that must be used in a month in order to make the average cost per message to be \$0.05?</p>
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Assignment: Pg 37: 3-15 odd, 21, 24

USING A FORMULA Use the formula $d = rt$ for distance traveled to solve for the missing variable.

3. $d = 20$ mi, $r = 40$ mi/h, $t = \underline{\quad?}$

4. $d = 300$ mi, $r = \underline{\quad?}$, $t = 4$ h

5. $d = \underline{\quad?}$, $r = 30$ mi/h, $t = 3$ h

6. $d = 250$ mi, $r = 50$ mi/h, $t = \underline{\quad?}$

GEOMETRY Use the formula $P = 2\ell + 2w$ for the perimeter of a rectangle to solve for the missing variable.

7. $P = \underline{\quad?}$, $\ell = 15$ ft, $w = 12$ ft

8. $P = 46$ in., $\ell = \underline{\quad?}$, $w = 4$ in.

9. $P = 100$ m, $\ell = 30$ m, $w = \underline{\quad?}$

10. $P = 25$ cm, $w = 5$ cm, $\ell = \underline{\quad?}$

USING PATTERNS Look for a pattern in the table. Then write an equation that represents the table.

11.

x	0	1	2	3
y	11	15	19	23

12.

x	0	1	2	3
y	60	45	30	15

13.

x	0	1	2	3
y	46	36	26	16

14.

x	0	1	2	3
y	57	107	157	207

15. **MAKE A CONNECTION** Which equation represents the table at the right?

(A) $y = 5x + 7$

(B) $y = 7x + 5$

(C) $y = 12x - 5$

(D) $y = 7x + 12$

x	0	1	2	3
y	12	19	26	33

21. **MAKE A CONNECTION** A car used 15 gallons of gasoline and traveled a total distance of 350 miles. The car's fuel efficiency is 25 miles per gallon on the highway and 20 miles per gallon in the city. Which equation can you solve to find h , the number of gallons that were used on the highway?

(A) $350 = 25(15 - h) + 20h$

(B) $25h + 20(15 - h) = 350$

(C) $350 = \left(\frac{25 + 20}{2}\right)h$

(D) $15 = \frac{350}{25h} + \frac{350}{20h}$

24. **DAYTONA 500** A recent Daytona 500 race was won by Dale Earnhardt, Jr. He completed the 500 mile race in 3.2 hours. What was his average racing speed?