

## Ch. 1 Critical Thinking Skills

### 1.1 Inductive and Deductive Reasoning

#### 1 Predict Next Line in Pattern

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Use inductive reasoning to predict the next line in the pattern.

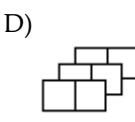
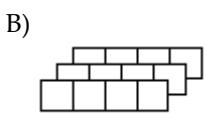
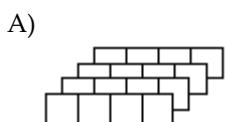
- 1)  $3 \times 3 = 9$   
 $33 \times 33 = 1089$   
 $333 \times 333 = 110,889$   
A)  $3333 \times 3333 = 11,108,889$       B)  $3333 \times 3333 = 111,889$   
C)  $333 \times 333 = 11,108,889$       D)  $3333 \times 3333 = 112,889$
  
- 2)  $(1 \times 9) - 7 = 2$   
 $(21 \times 9) - 7 = 182$   
 $(321 \times 9) - 7 = 2882$   
A)  $(4321 \times 9) - 7 = 38,882$       B)  $(4321 \times 9) - 7 = 28,882$   
C)  $(4321 \times 9) - 7 = 3881$       D)  $(432 \times 9) - 7 = 38,882$
  
- 3)  $6 \times 8 = 7 \times 9 - 15$   
 $8 \times 10 = 9 \times 11 - 19$   
A)  $10 \times 12 = 11 \times 13 - 23$       B)  $10 \times 12 = 11 \times 13 - 21$   
C)  $10 \times 12 = 13 \times 19 - 23$       D)  $10 \times 12 = 11 \times 13 + 21$
  
- 4)  $(5 \times 1) \times (2 \times 1) = 10$   
 $(5 \times 10) \times (2 \times 2) = 200$   
 $(5 \times 100) \times (2 \times 3) = 3000$   
A)  $(5 \times 1000) \times (2 \times 4) = 40,000$       B)  $(5 \times 1000) \times (2 \times 4) = 45,000$   
C)  $(5 \times 1000) \times (2 \times 4) = 4000$       D)  $(5 \times 1000) \times (2 \times 4) = 35,000$
  
- 5)  $9 \times 10 = 11 \times 12 - (9 + 10 + 11 + 12)$   
 $10 \times 11 = 12 \times 13 - (10 + 11 + 12 + 13)$   
A)  $11 \times 12 = 13 \times 14 - (11 + 12 + 13 + 14)$       B)  $12 \times 13 = 14 \times 15 - (12 + 13 + 14 + 15)$   
C)  $11 \times 12 = 13 \times 14 - (9 + 10 + 11 + 12 + 13 + 14)$       D)  $12 \times 13 = 14 \times 15 - (11 + 10 + 9 + 8)$
  
- 6)  $18 + 81 = 99$   
 $19 + 91 = 110$   
A)  $20 + 101 = 121$       B)  $20 + 101 = 162$       C)  $101 + 20 = 121$       D)  $88 + 33 = 121$
  
- 7)  $30 - 9 = 21$   
 $300 - 89 = 211$   
 $3000 - 789 = 2211$   
A)  $30,000 - 6789 = 23,211$       B)  $3000 - 6789 = 23,211$   
C)  $30,000 - 6789 = 293,211$       D)  $300,000 - 6789 = 23,211$

## 2 Draw Next Figure in Pattern

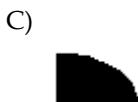
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Draw the next figure in the pattern.

1)



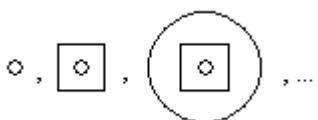
2)



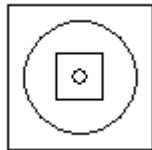
3)



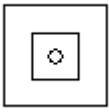
4)



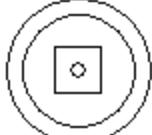
A)



B)



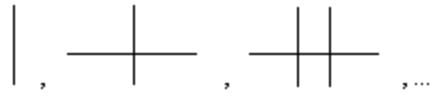
C)



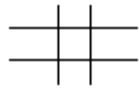
D)



5)



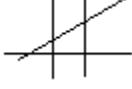
A)



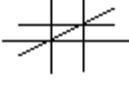
B)



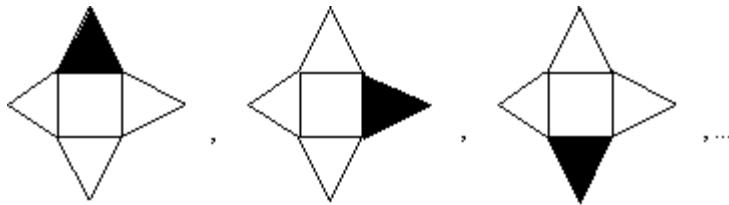
C)



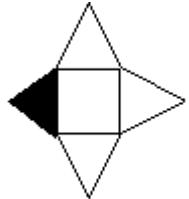
D)



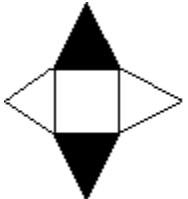
6)



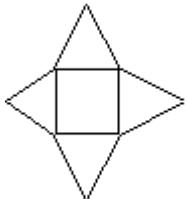
A)



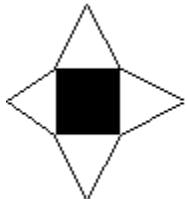
B)



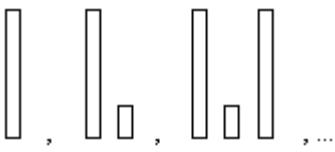
C)



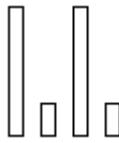
D)



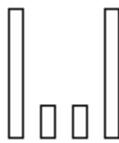
7)



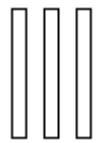
A)



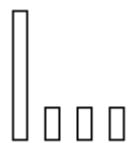
B)



C)



D)



### 3 Predict Next Number in Sequence

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

Use inductive reasoning to predict the next number in the sequence.

1)  $6, 8, 10, 12, 14$

A) 16

B) 18

C) 20

D) 15

2)  $29, 24, 19, 14, 9$

A) 4

B) 5

C) 2

D) 0

3)  $4, -20, 100, -500, 2500$

A) -12,500

B) 12,500

C) -4500

D) 4500

4)  $0, 5, 5, 0, -5, \dots$

A) -5

B) 0

C) 5

D) 10

5)  $1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \frac{1}{16}, \dots$

A)  $-\frac{1}{32}$ B)  $\frac{1}{32}$ C)  $-\frac{1}{64}$ D)  $\frac{1}{64}$ 

6)  $2, 5, 4, 10, 8, 20, \dots$

A) 16

B) 40

C) 12

D) 30

#### 4 Solve Apps: Use Inductive Reasoning I

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the problem using inductive reasoning.

- 1) Find the next term in the following sequence of days of the week.

S, S, M, T, W

A) T

B) F

C) S

D) M

- 2) Find the next term in the following sequence.

T, F, S, E, T, T, F

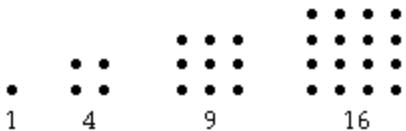
A) S

B) T

C) F

D) E

- 3) Find the 18th square number that corresponds to the following dot sequence.



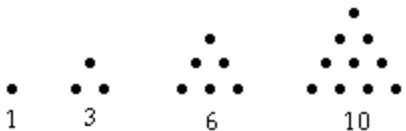
A)  $s_{18} = 324$

B)  $s_{18} = 36$

C)  $s_{18} = 171$

D)  $s_{18} = 361$

- 4) Find the 6th triangular number that corresponds to the following dot sequence.



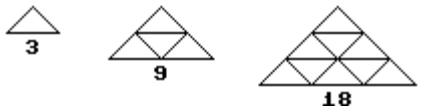
A)  $t_6 = 21$

B)  $t_6 = 15$

C)  $t_6 = 42$

D)  $t_6 = 18$

- 5) How many line segments are used in the next figure?



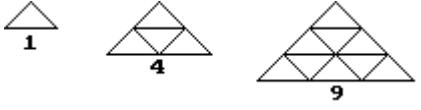
A) 30

B) 27

C) 36

D) 24

- 6) How many triangles are in the next figure?



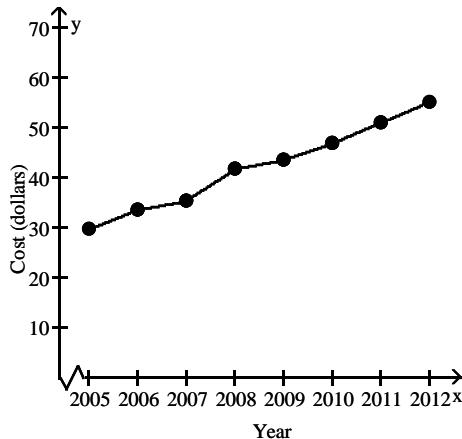
A) 16

B) 36

C) 12

D) 18

- 7) The following graph shows the average monthly cost for satellite television for each year from 2005 through 2012. Assuming the trend continues, use the graph to predict the average monthly cost for satellite TV in 2013.



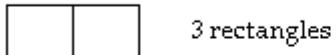
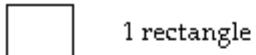
- A) \$58      B) \$48      C) \$42      D) \$68

##### 5 \*Solve Apps: Use Inductive Reasoning II

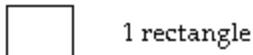
**SHORT ANSWER.** Write the word or phrase that best completes each statement or answers the question.

**Solve the problem using inductive reasoning.**

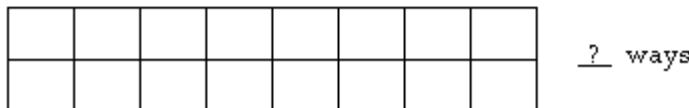
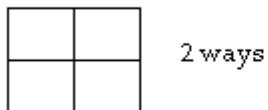
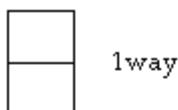
- 1) How many rectangles are there in the last two figures?



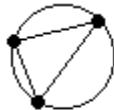
- 2) How many rectangles are there in the last two figures?



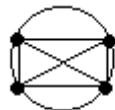
- 3) In how many ways can you exactly cover the last two diagrams with "dominoes" that are just the size of two small squares?



- 4) How many line segments are determined by joining dots on the last two circles?



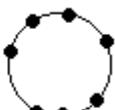
3 segments



6 segments



? segments



? segments

- 5) Find the number of games played in a round robin tournament for the given numbers of teams. In a round robin tournament every team plays every other team once.

Number of teams	Number of games played
3 teams	3 games
4 teams	6 games
5 teams	10 games
6 teams	_ games
7 teams	_ games

Look for a pattern. Find the number of games played in a round robin tournament involving  $n$  teams. Find the number of games played in a round robin tournament involving 19 teams.

## 1.2 Estimation

### 1 Estimate the Answer to Arithmetic Calculation

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Solve the problem.**

- 1) Estimate the answer by rounding each number to the nearest ten.

$$99 + 51 + 55 + 92 + 65$$

A) 370

B) 360

C) 362

D) 400

- 2) Estimate the answer by rounding each number to the nearest ten.

$$54 - 35$$

A) 10

B) 19

C) 20

D) 90

3) Estimate the answer by rounding each number to the nearest hundred.

$$738 + 766 + 567 + 991 + 886$$

A) 4000

B) 3900

C) 3948

D) 3950

4) Estimate the answer by rounding each number to the nearest hundred.

$$871 - 224$$

A) 700

B) 647

C) 600

D) 1100

5) Estimate the answer by rounding each number to the nearest hundred.

$$943 - 672$$

A) 200

B) 271

C) 300

D) 270

6) Estimate the answer by rounding the first number to the nearest hundred and the second number to the nearest thousand.

$$131 \times 2854$$

A) 300,000

B) 200,000

C) 400,000

D) 60,000

7) Estimate the answer by rounding the first number to the nearest ten thousand and the second number to the nearest hundred.

$$53,130 \div 469$$

A) 100

B) 90

C) 900

D) 1000

8) Estimate the answer by rounding the first number to the nearest ten thousand and the second number to the nearest hundred.

$$\begin{array}{r} 71,158 \\ \hline 489 \end{array}$$

A) 140

B) 130

C) 1300

D) 1400

## 2 Solve Apps: Estimate Answer

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Estimate the answer to the problem.**

1) Each gallon of shingle stain covers 120 square feet. How many gallons should you buy to cover 445 square feet?

A) 4 gal

B) 5 gal

C) 3 gal

D) 2 gal

2) One cook can make enough food for 350 people a night. How many cooks are needed to feed 2317 people a night?

A) 7 cooks

B) 6 cooks

C) 8 cooks

D) 9 cooks

3) David's company has to ship 3082 boxes of sprinklers. If a truck can hold 550 boxes, how many trucks does he need to ship all the boxes?

A) 6 trucks

B) 7 trucks

C) 5 trucks

D) 4 trucks

4) A particular freight elevator can safely carry 862 pounds. How many 160-pound bundles of wood can be safely carried by this elevator?

A) 5 bundles

B) 6 bundles

C) 4 bundles

D) 7 bundles

5) Each gallon of porch and deck paint covers 200 square feet. How many gallons are needed to cover 1557 square feet?

A) 8 gal

B) 9 gal

C) 7 gal

D) 6 gal

6) Jane runs 32 miles a day. Without finding the exact answer, estimate the total number of miles Jane runs in 18 days.

A) 600 mi

B) 200 mi

C) 300 mi

D) 800 mi

- 7) An appliance store sells 46 refrigerators a week. Without finding the exact amount, calculate the total amount of money the store makes in a week if each refrigerator costs \$739.
- A) \$35,000      B) \$28,000      C) \$40,000      D) \$32,000
- 8) James' drive from home to work is 30.5 miles one way. If in a month he goes to work 19 days, then how many miles does he drive going from home to work and back in one month?
- A) 1200 mi      B) 1500 mi      C) 1750 mi      D) 900 mi
- 9) A mobile library has 1078 books in its collection. If there are 22 shelves in the library, then how many books, on average, are stacked on each shelf?
- A) 50 books      B) 60 books      C) 55 books      D) 46 books
- 10) Ingred is planning a vacation to Colorado. Her round-trip airfare from Chicago, Illinois, to Denver, Colorado, totals \$154. Car rental is \$56 per day and her hotel is a total of \$94 per day, and she estimates a total of \$50 per day for food, gas, and miscellaneous items. If Ingred is planning on staying five full days and nights, estimate her total expenses.
- A) \$1150      B) \$350      C) \$1210      D) \$1500

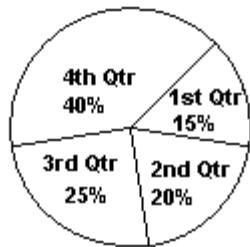
### 3 Solve Apps: Estimate Answer (Table/Graph)

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Estimate the answer from the table or graph.**

- 1) The profit earnings for ABC company are reported quarterly. The earnings as a percentage of the yearly earnings for 2012 are shown in the pie chart. If the total earnings for the year were \$430,000, what were the earnings for the third quarter?

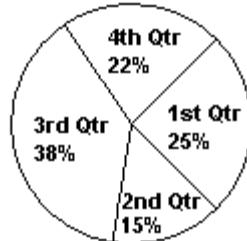
**% Earnings of ABC Company**



- A) \$107,500      B) \$86,000      C) \$215,000      D) \$172,000

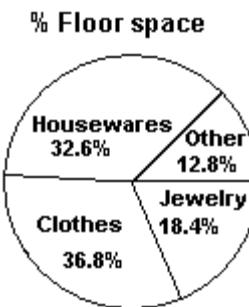
- 2) The profit earnings for XYZ company are reported quarterly. The earnings as a percentage of the yearly earnings for 2012 are shown in the pie chart. If the earnings in the first quarter were \$55,000, what were the earnings for the whole year?

**% Earnings of XYZ Company**



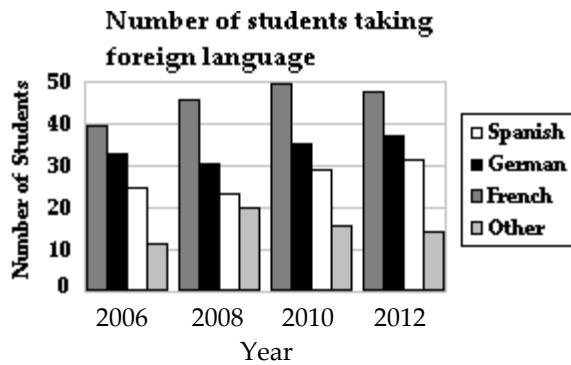
- A) \$220,000      B) \$275,000      C) \$110,000      D) \$27,500

- 3) A retail store has items such that they fall under the categories of clothes, housewares, jewelry, and other. The percentage floor space allocated for displaying each category of items is shown in the pie chart. If the floor space allocated to clothes is  $22,000 \text{ ft}^2$ , what is the floor space allocated to jewelry?



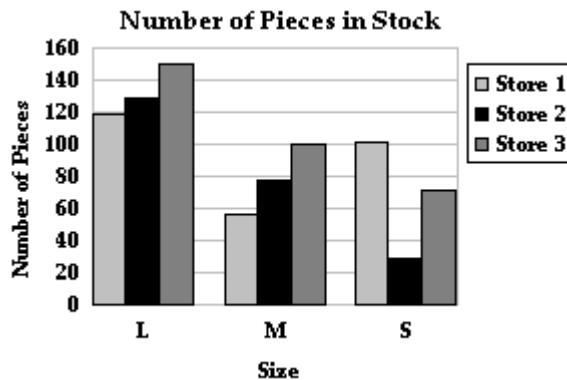
- A)  $11,000 \text{ ft}^2$       B)  $44,000 \text{ ft}^2$       C)  $66,000 \text{ ft}^2$       D)  $5500 \text{ ft}^2$

- 4) The number of students at Alder High School who studied foreign languages in different years is shown in the bar graph. What is the total number of students who studied a foreign language in 2012? (Assume no student studied two foreign languages).



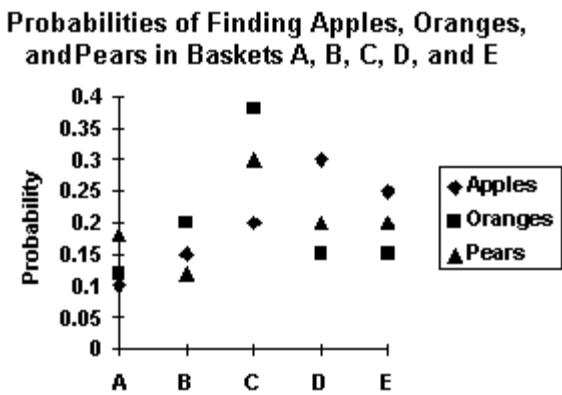
- A) 130 students      B) 150 students      C) 170 students      D) 90 students

- 5) A retail chain has three stores that are carrying various sizes of a particular dress. The number of pieces of each size that a store has is shown in the graph below. If Store 1 sold 35 pieces of the large (L) size, how many does it still have?



- A) 85 pieces      B) 115 pieces      C) 165 pieces      D) 1140 pieces

- 6) The probability of finding apples, oranges, and pears in each of baskets A, B, C, D, and E is shown in the graph given below. What is the probability of finding oranges in one of the baskets A, B, or C?



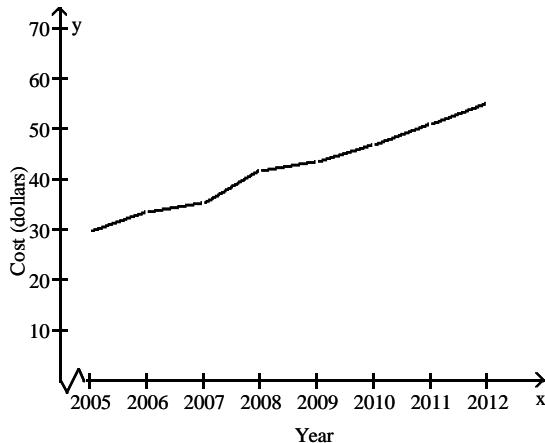


- B) 1 C) None

- C) None

- D) 0.72

- 7) The graph shows the average monthly cost of a wireless phone service for the years 2005 through 2012.  
Estimate the average monthly cost of this wireless phone service in 2005.







- C) \$25

- D) \$40

- 8) The number of calories in different food items are given below. If Jeanne had a serving of salad and two slices of bread for lunch, what was her calorie intake?

Food item	Calories
Glass of milk	160
Bowl of cereal	110
Slice of bread	60
Fruit bowl	60
Serving of salad	35

- A) 155 calories      B) 130 calories      C) 95 calories      D) 190 calories

- B) 130 calories

- C) 95 calories

- D) 190 calories

- 9) In a shop that sells a variety of nuts, the prices of some items are as given below. If Sarah buys 2 lb of cashews, 1 lb of walnuts, and 2 lb of raisins, how much did she have to pay?

Item	Cost/lb
Almonds	\$4.50
Walnuts	\$3.90
Cashews	\$4.90
Pecans	\$3.70
Raisins	\$3.10

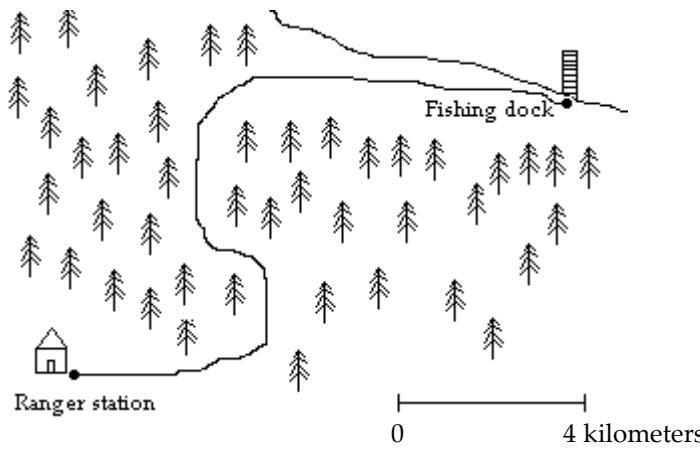
- A) \$19.90      B) \$23.80      C) \$26.90      D) \$16.00

#### 4 Estimate Using Distance or Area

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

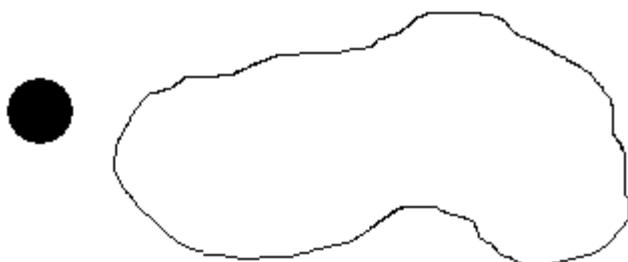
Solve the problem.

- 1) Below is a map of a trail through a forest preserve. Using the scale on the map, estimate the distance of the route starting at the fishing dock and ending at the ranger station.



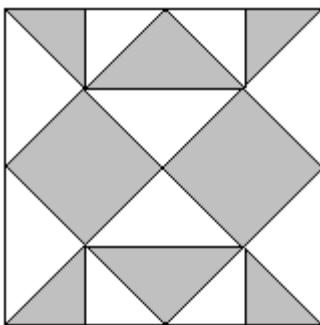
- A)  $\approx 20$  km      B)  $\approx 16$  km      C)  $\approx 28$  km      D)  $\approx 32$  km

- 2) Estimate the maximum number of smaller figures (at left) that can be placed in the larger figure (at right) without the small figures overlapping.



- A) 20      B) 24      C) 15      D) 17

3) Estimate the percent of area that is shaded in the following figure.



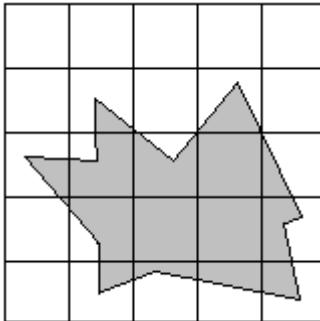
A) 50%

B) 80%

C) 25%

D) 40%

4) If each square represents one square unit, estimate the area of the shaded figure in square units.



A) 8 square units

B) 10 square units

C) 6 square units

D) 7 square units

5) The height of the antenna on top of the building, shown in the figure below, is 73 feet. Estimate the total height of the building and antenna together.



A) 511 feet

B) 438 feet

C) 365 feet

D) 584 feet

### 1.3 Problem Solving

#### 1 Solve Apps: Problem Solving I

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Solve the problem.**

- 1) A small farm field is a square measuring 320 ft on a side. What is the perimeter of the field? If you double the length of each side of the field, what is the new perimeter?  
A) 1280 ft, 2560 ft      B) 640 ft, 1280 ft      C) 640 ft, 2560 ft      D) 320 ft, 1280 ft
  
- 2) An electric pole 15 ft high casts a shadow that is 7.5 ft long. What is the length of the shadow of a 22-ft pole?  
A) 11 ft      B) 2 ft      C) 14 ft      D) 8 ft

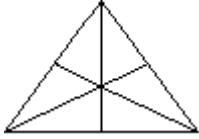
- 3) An airport parking lot charges \$5.00 for the first two hours of parking and \$0.75 for each additional half hour or part thereof. If Sam parks his car for 8 hours, how much does he pay for parking?  
A) \$14.00      B) \$9.50      C) \$9.00      D) \$12.00
- 4) A telephone call from Texas, U.S.A. to Ontario, Canada costs \$1.00 for the first minute and \$0.53 for each additional minute. How much will a 27-minute call cost?  
A) \$14.78      B) \$28.56      C) \$13.78      D) \$14.31
- 5) Jill took five courses this semester, each for four credit hours. She received a B (3 points), a B+ (3.5 points), an A (4 points), and a B+ (3.5 points) in four of the courses. If her GPA is 3.4, what was her grade in the fifth course?  
A) B (3 points)      B) C+ (2.5 points)      C) B+ (3.5 points)      D) D (1 point)
- 6) One gallon of a driveway sealant covers an area of  $190 \text{ ft}^2$ . How many gallons of the sealant are needed to cover a  $950 \text{ ft}^2$  driveway?  
A) 5 gal      B) 7 gal      C) 8 gal      D) 2 gal
- 7) Margaret is saving \$27 every week so that she can have enough money to buy a bracelet she wants. The bracelet costs \$706. What is the minimum number of weeks she will have to save to be able to buy the bracelet?  
A) 27 weeks      B) 26 weeks      C) 28 weeks      D) 25 weeks
- 8) To make orange juice from concentrate powder, you need to mix 1.5 teaspoons of the concentrate in 8 ounces of water. How much concentrate powder do you need for 1 gallon of water?  
A) 24 teaspoons      B) 12 teaspoons      C) 3 teaspoons      D) 7.5 teaspoons
- 9) The cost of gasoline is \$3.92 per gallon. Jane's car gives a mileage of 37 miles per gallon. Approximately how much did Jane pay for gasoline for a trip of 556 miles?  
A) \$58.91      B) \$66.64      C) \$54.88      D) \$74.48
- 10) A rectangle has area of 600 square meters. Its length and width are whole numbers. Which measurements give the smallest perimeter?  
A) 20 m by 30 m      B) 1 m by 600 m      C) 5 m by 120 m      D) 6 m by 100 m

## 2 Solve Apps: Problem Solving II

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Solve the problem.**

- 1) How many triangles (of any size) are there in the figure?



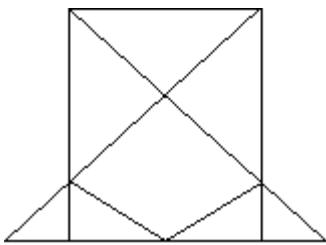
A) 16

B) 13

C) 19

D) 15

2) How many triangles (of any size) are there in the figure?



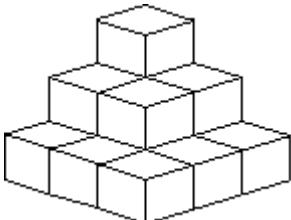
A) 14

B) 12

C) 9

D) 10

3) How many cubes (of any size) are there in the figure?



A) 15

B) 14

C) 9

D) 10

4) Missy and Karl work at different jobs. Missy earns \$5 per hour and Karl earns \$4 per hour. They each earn the same amount per week but Karl works 2 more hours. How many hours a week does Karl work?

A) 10 hr

B) 8 hr

C) 12 hr

D) 14 hr

5) A boxer takes 3 drinks of water between each round for the first four rounds of a championship fight. After the fourth round he starts to take his three drinks plus one additional drink between each of the remaining rounds. If he continues to increase his drinks by 1 after each round, how many drinks will he take between the 14th and 15th round?

A) 14 drinks

B) 12 drinks

C) 10 drinks

D) 16 drinks

6) An average library contains at least 50 and at most 250 books. How many library owners must be polled to be certain that at least two owners have the same number of books in their libraries?

A) 202 owners

B) 200 owners

C) 201 owners

D) 203 owners

7) An average newspaper contains at least 16 pages and at most 87 pages. How many newspapers must be collected to be certain that at least two newspapers have the same number of pages?

A) 73 newspapers

B) 71 newspapers

C) 72 newspapers

D) 70 newspapers

8) A cell has at least 3 and at most 47 nuclei. How many cells must a scientist view under his microscope to be certain that at least two cells have the same number of nuclei?

A) 46 cells

B) 44 cells

C) 45 cells

D) 47 cells

9) A yardstick measures  $\frac{1}{2}$  by 2 by 36 inches. How many yardsticks will fit in a box 2 inches wide and 36 inches high, if the girth of the box is 24 inches?

A) 48 yardsticks

B) 40 yardsticks

C) 10 yardsticks

D) 60 yardsticks

10) A yardstick measures  $\frac{1}{4}$  by 3 by 36 inches. How many yard sticks will fit in a box 3 inches wide and 36 inches high, if the girth of the box is 30 inches?

A) 120 yardsticks

B) 12 yardsticks

C) 24 yardsticks

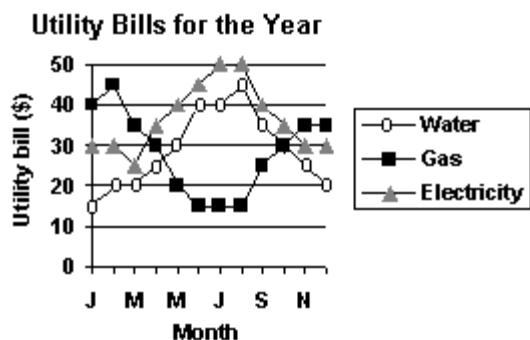
D) 96 yardsticks

### 3 Solve Apps: Use Graph or Table

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

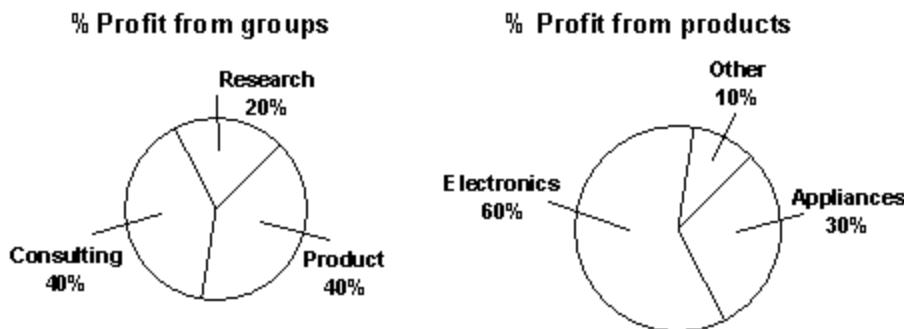
Use the table or graph to answer the question.

- 1) Amy graphed her utility bills for the last year for her records. Estimate the total amount Amy paid for her utilities for the month of January.



- A) \$85      B) \$105      C) \$75      D) \$125

- 2) Company MRK declared profits of \$3,000,000 for the year 2012. The profits were from its three groups (research, product, and consulting) as shown in the pie chart. The profits from the product group were further categorized as shown in the second pie chart. How much was the profit from appliances?



- A) \$360,000      B) \$600,000      C) \$450,000      D) \$900,000

- 3) A company decides the bonus it gives to its employees on the basis of the number of years of service as shown in the following table:

Number of years of service	Bonus
1–3	4% of salary
3–8	10% of salary
8–15	13% of salary
15 or more	20% of salary

If Anne gets a bonus of \$5300 after working 4 years for this company, what is her salary?

- A) \$53,000      B) \$26,500      C) \$10,600      D) \$42,400

- 4) The number of vacation days a company provides for its employees depends on the number of years of service as shown in the following table:

Number of years of service	1	1-5	5-10	10 or more
Number of vacation days	6	8	14	19

If Jack took 15 vacation days last year, what is the minimum number of years he must have worked for the company?



- 5) The following chart shows an appliance store's average percent profit margin on certain items:

Product category	Average profit margin,%
Washer/Dryer	19
Refrigerator	14
Stove	18
Microwave	38

What is the average profit for the store if it lists the price of a particular refrigerator at \$800?

- A) \$112.00      B) \$98.25      C) \$304.00      D) \$608.00

## 4 Solve Magic Square Problem

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

## Complete the magic (addition) square.

- 1) Use each number 8, 9, 10, 11, 12, 13, 14, 15, and 16 once.

11		
10	12	
15	8	13

A)

B)

11	16	9
10	12	14
15	8	13

11	16	14
10	12	9
15	8	13

C)

D)

11	14	9
10	12	16
15	8	13

11	14	16
10	12	9
15	8	13

2) Use each number 15, 16, 17, 18, 19, 20, 21, 22, and 23 once.

22		18
15	19	
	21	16

A)

22	17	18
15	19	23
20	21	16

B)

22	23	18
15	19	17
20	21	16

C)

22	20	18
15	19	17
23	21	16

D)

22	17	18
15	19	20
23	21	16

3) Use each number 17, 18, 19, 20, 21, 22, 23, 24, and 25 once.

20		18
	21	23
17		

A)

20	25	18
19	21	23
24	17	22

B)

20	25	18
19	21	23
22	17	24

C)

20	24	18
19	21	23
22	17	25

D)

20	22	18
19	21	23
24	17	25

4) Use each number 42, 43, 44, 45, 46, 47, 48, 49, and 50 once.

	44	45
	46	50
		43

A)

49	44	45
42	46	50
47	48	43

B)

47	44	45
42	46	50
49	48	43

C)

48	44	45
42	46	50
47	49	43

D)

49	44	45
48	46	50
42	47	43

5) Use each number 24, 25, 26, 27, 28, 29, 30, 31, and 32 once.

29		
	28	26
25	32	

A)

29	24	31
30	28	26
25	32	27

B)

29	24	30
31	28	26
25	32	27

C)

29	27	31
30	28	26
25	32	24

D)

29	27	30
31	28	26
25	32	24

6) Use each number 30, 31, 32, 33, 34, 35, 36, 37, and 38 once.

31		35
		30
33	32	

A)

31	36	35
38	34	30
33	32	37

B)

31	36	35
37	34	30
33	32	38

C)

31	37	35
38	34	30
33	32	36

D)

31	37	35
38	36	30
33	32	34

## Ch. 1 Critical Thinking Skills

### Answer Key

#### 1.1 Inductive and Deductive Reasoning

##### 1 Predict Next Line in Pattern

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A
- 6) A
- 7) A

##### 2 Draw Next Figure in Pattern

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A
- 6) A
- 7) A

##### 3 Predict Next Number in Sequence

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A
- 6) A

##### 4 Solve Apps: Use Inductive Reasoning I

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A
- 6) A
- 7) A

##### 5 \*Solve Apps: Use Inductive Reasoning II

1)  $5 + 4 + 3 + 2 + 1 = 15$  rectangles

$8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 36$  rectangles

2)  $6 + 5 + 4 + 3 + 2 + 1 = 21$  rectangles

$10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 55$  rectangles

3) 8 ways

34 ways

4)  $4 + 3 + 2 + 1 = 10$  segments

$6 + 5 + 4 + 3 + 2 + 1 = 21$  segments

5) 6 teams:  $5 + 4 + 3 + 2 + 1 = 15$  games

7 teams:  $6 + 5 + 4 + 3 + 2 + 1 = 21$  games

n teams :  $\frac{n(n - 1)}{2}$  games

19 teams: 171 games

#### 1.2 Estimation

##### 1 Estimate the Answer to Arithmetic Calculation

- 1) A
- 2) A
- 3) A

- 4) A
- 5) A
- 6) A
- 7) A
- 8) A

**2 Solve Apps: Estimate Answer**

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A
- 6) A
- 7) A
- 8) A
- 9) A
- 10) A

**3 Solve Apps: Estimate Answer (Table/Graph)**

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A
- 6) A
- 7) A
- 8) A
- 9) A

**4 Estimate Using Distance or Area**

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A

**1.3 Problem Solving**

**1 Solve Apps: Problem Solving I**

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A
- 6) A
- 7) A
- 8) A
- 9) A
- 10) A

**2 Solve Apps: Problem Solving II**

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A
- 6) A
- 7) A
- 8) A
- 9) A

10) A

**3 Solve Apps: Use Graph or Table**

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A

**4 Solve Magic Square Problem**

- 1) A
- 2) A
- 3) A
- 4) A
- 5) A
- 6) A