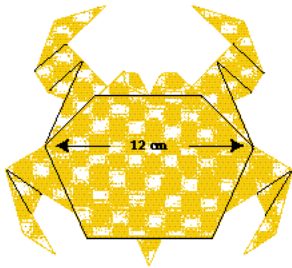


# Number Sense

## Grade 7 Assessment ... Practice Items

Origami is the art of folding paper into decorative shapes. Greg made the origami crab shown below.



Crab from 40 x 40 cm paper

- 2 If he were to make a similar crab from a 60 x 60 cm sheet of paper, how wide would the body of the finished crab be?
- A. 18 cm  
 B. 20 cm  
 C. 32 cm  
 D. 48 cm
- 37 Andy is making cookies for the bake sale. He needs to make 20 dozen cookies. For each dozen, he needs 4 ounces of nuts. How many pounds of nuts should he buy? (1 lb = 16 oz)
- A.  $\frac{1}{4}$  lb  
 B.  $1\frac{3}{5}$  lb  
 C. 4 lb  
 D. 5 lb

- 43 Paul's mother asked him to get the following items from the grocery store. The items and prices are listed below.

noodles	4 12-oz bags	99¢/bag
broccoli	2 lbs	89¢/lb
cashew nuts	2 lbs	\$3.59/lb
honeydew melon		\$1.74 each
bread		\$1.23 a loaf

Paul has \$20. Before he gets to the check-out line, he estimates the total price to make sure he has enough money. (There is no sales tax on groceries.) Clearly explain or show how Paul could estimate the total price in his head to make sure he has enough money.

- 4 To convert from the Fahrenheit temperature scale ( $F$ ) to the Celsius scale ( $C$ ), subtract 32 from the Fahrenheit temperature, then multiply by  $\frac{5}{9}$ . Which expression below is equivalent to this procedure?
- A.  $F - 32 \times 5 \div 9$   
 B.  $32 - F \times 5 \div 9$   
 C.  $(F - 32) \times 5 \div 9$   
 D.  $(32 - F) \times 5 \div 9$

- 34 Look at the table below.

Total Amount of Solid Waste Recycled in 1990

Material	Amount Recycled (in millions of tons)	Percent of Material Recycled
Paper Products	20.9	28.5%
Glass	2.6	19.7%
Metal	3.7	22.8%
Plastic	0.4	2.5%
Food Waste	0.0	0.0%
Yard Waste	4.2	12.0%
Wood and Other	1.6	5.6%

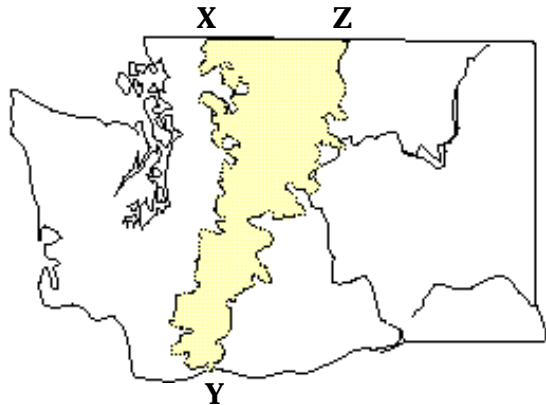
How much plastic material was recycled in 1990?

- A. 40,000 tons  
 B. 400,000 tons  
 C. 4,000,000 tons  
 D. 40,000,000 tons
- 45 Stephan is going to work for his aunt Monday through Friday during the summer. Stephan will be paid \$4.85 an hour. The amount of work will vary, but his aunt guarantees Stephan 4 to 8 hours a day. Which of these is the best estimate of how much money Stephan could earn by working for his aunt for 2 months?
- A. \$300 - \$600  
 B. \$400 - \$800  
 C. \$600 - \$1,300  
 D. \$800 - \$1,800

# Measurement

## Grade 7 Assessment ... Practice Items

- 6 At the most, Washington is about 240 miles from north to south. Look at the shaded area with the dashed line around it.



The forest service plans to survey the miles around the shaded area, along the path shown by the dashed line. The survey will go from point X to point Y, then to point Z, and straight back to point X. A ranger needs to estimate how many miles this will be. Which of the following is the best estimate of the total number of miles around the shaded area?

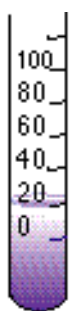
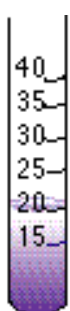
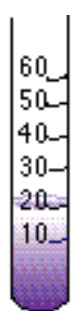
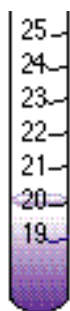
- A. 500 miles
- B. 600 miles
- C. 800 miles
- D. 1,200 miles

Clearly explain or show how you found your estimate.

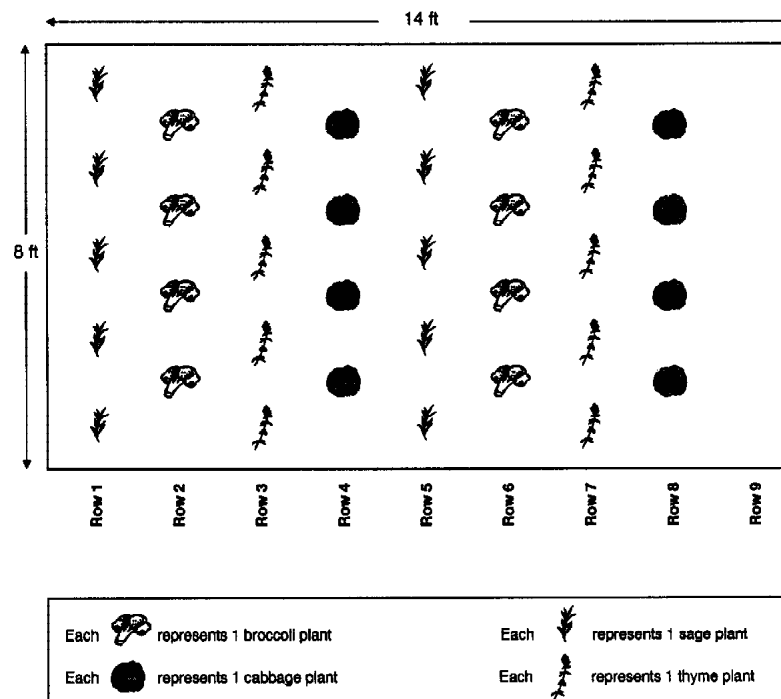
- 33 Brittany is heating a beaker of water on a hot plate. She records the temperature of the water with a thermometer every minute for 5 minutes. Her results are shown below.

Time (Minutes)	Temperature (°C)
0	20.0
1	20.0
2	20.5
3	21.0
4	21.5
5	23.0

Which of the following is the most likely thermometer Brittany used to measure the temperature of the water?



Use the diagram below to answer questions 15 - 16.



- 15 Assume Samuel spaced the rows evenly apart. What is the approximate distance between rows?

- A. 2 ft
- B.  $1\frac{1}{2}$  ft
- C. 1 ft
- D.  $\frac{1}{2}$  ft

- 16 Samuel needs to figure out how many square yards his garden is so he will know how much fertilizer to spread on it.

Tell how many **square yards** his garden is. Show how you found your answer using words, numbers, and/or pictures.

$$9 \text{ sq ft} = 1 \text{ sq yd}$$

Samuel's garden is \_\_\_\_\_ square yards.

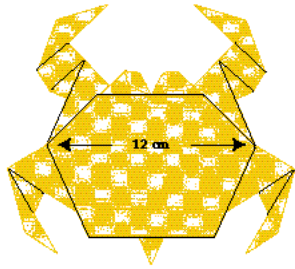
- 24 Randy finds a pair of in-line skates that sells for \$39.70. The store charges 9.5% sales tax. About how much money will Randy have to spend for these in-line skates?

- A. \$40.00
- B. \$44.00
- C. \$48.00
- D. \$52.00

# Geometric Sense

## Grade 7 Assessment ... Practice Items

Origami is the art of folding paper into decorative shapes. Greg made the origami crab shown below.

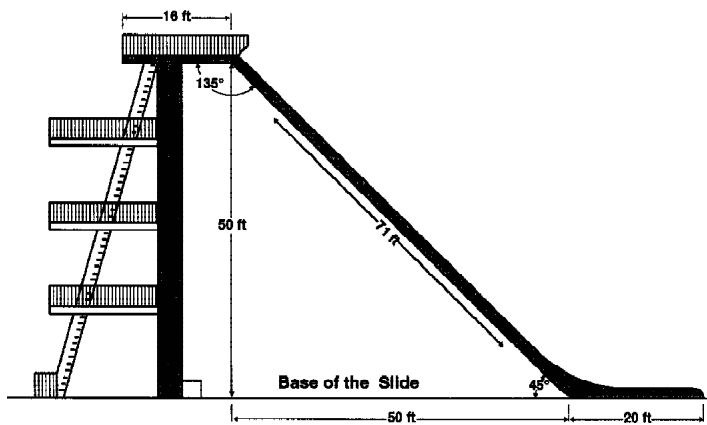


Crab from 40 x 40 cm paper

- 1 The body of the crab has a bold outline. Which of the following best describes the shape of the body of the crab?

- A. Quadrilateral
- B. Pentagon
- C. Hexagon
- D. Octagon

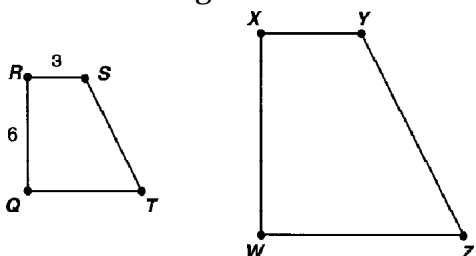
- 17 The Slide of Your Life has been a popular attraction at the carnival. For next year, the owners of the carnival would like to build another slide **similar** to this slide, but with a maximum height of 100 feet.



Which of the following will be true about the new slide?

- A. The height of the slide will be 100 feet, but the angles will increase from  $135^\circ$  to  $270^\circ$  and from  $45^\circ$  to  $90^\circ$ .
- B. The base of the slide will remain the same, but the length of the slide will increase from 71 feet to 142 feet.
- C. The  $135^\circ$  and  $45^\circ$  angles will remain the same, but the length of the slide will increase from 71 feet to 142 feet.
- D. The height of the slide will increase to 100 feet, the  $135^\circ$  angle will increase to  $270^\circ$ , but the  $45^\circ$  angle of the slide will remain the same.

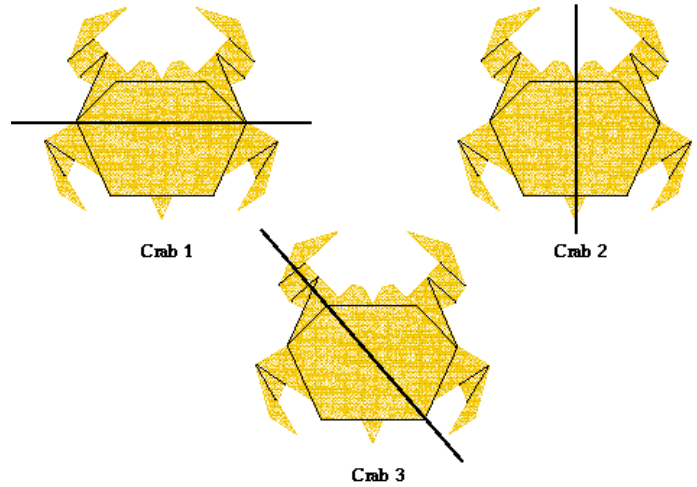
- 25 Figure  $QRST$  is **similar** to figure  $WXYZ$



The lengths of  $\overline{WX}$  and  $\overline{WZ}$  are each 9 units. How long is  $\overline{XY}$ ?

- A. 9 units
- B. 6 units
- C.  $4\frac{1}{2}$  units
- D. 3 units

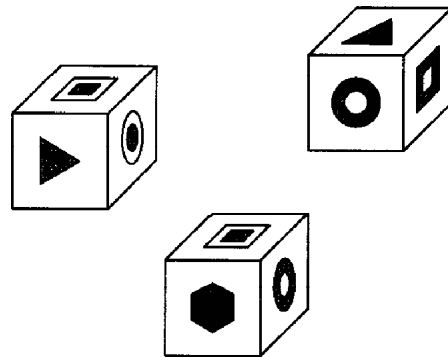
Look at the 3 crabs below.



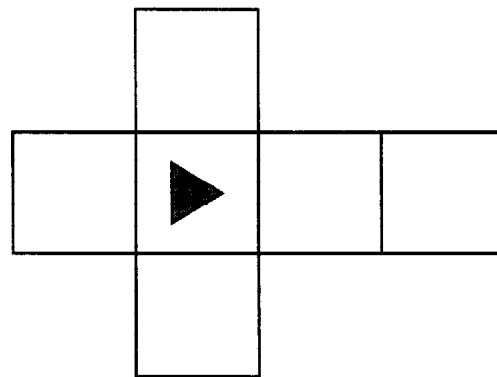
- 3 Which crab or crabs show a line of symmetry?

- A. Crab 1 only
- B. Crab 2 only
- C. Crabs 1 and 2 only
- D. Crabs 1, 2, and 3

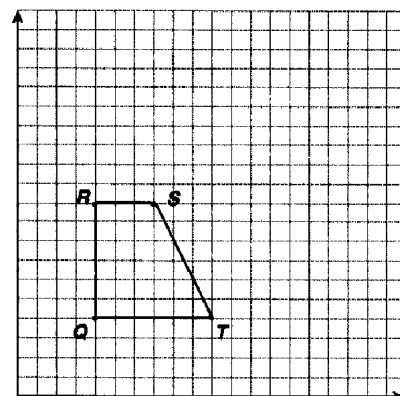
- 20 Three different views of the same cube are shown below.



Draw the missing shapes in the figure below to show how the cube will look when it is unfolded. Be sure to correctly shade the shapes.



- 26 Look at the figure  $QRST$  on the graph below. Each grid line is worth 1 unit.



Suppose figure  $QRST$  were slid (translated) such that three of the new points were the following:

$$Q' = (6, 13), \quad R' = (6, 19), \quad \text{and} \quad T' = (12, 13)$$

What would be the coordinates of point  $S'$ ?

- A. (9, 13)
- B. (9, 19)
- C. (12, 13)
- D. (12, 19)

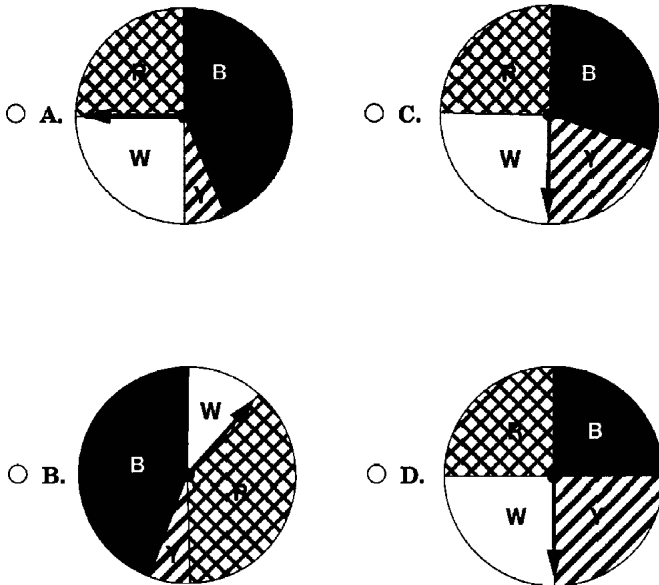
# Probability & Statistics

## Grade 7 Assessment ... Practice Items

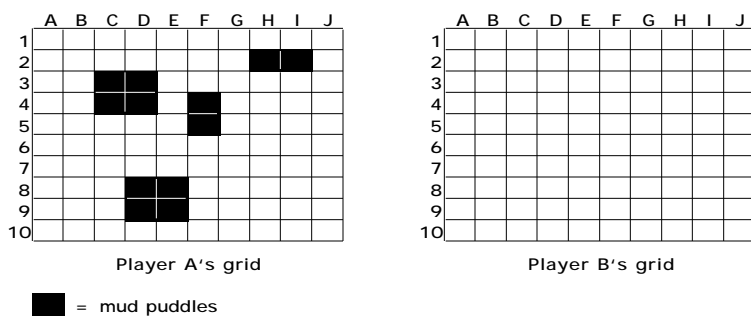
- 9 The following chart shows the results of spinning a spinner 1,000 times.

Red	239
White	261
Blue	441
Yellow	59
Total Number of Spins	1000

Which spinner is most likely to show these results?



- 27 In a game called "Mud Puddle," two players use 10 x 10 grids, as shown below.



Without player B looking, player A draws two large and two small "mud puddles" on his grid.

Player B starts the game by telling the letter and number of each square that he "steps" on. A square may be stepped on only once. Player A then tells whether he stepped on a mud puddle. If player B did, he marks that square on his own grid with an X. If he is safe, he marks that square with a 0.

Player B wins if he can take 15 steps without stepping on more than two of the mud puddle squares. The game is over if Player B has stepped on three mud puddle squares.

What is the probability of stepping on a mud puddle square on the first step? Explain or show how you found your answer.

- 28 If the first step taken by Player B is safe, what is the probability of stepping on a mud puddle square on the second step?

- A.  $\frac{11}{98}$   
 ○ B.  $\frac{12}{98}$   
 ○ C.  $\frac{12}{99}$   
 ○ D.  $\frac{11}{100}$

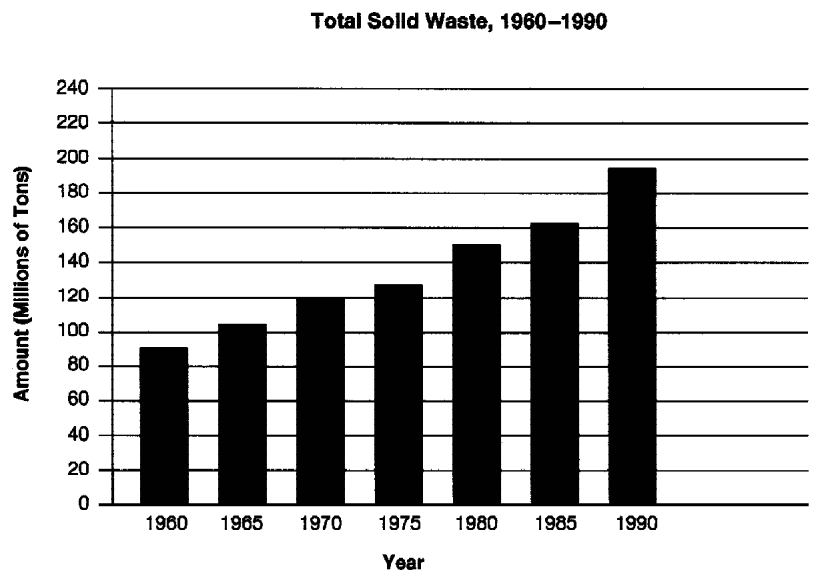
- 18 You are helping out at the carnival. Since the cages in the Diving Swan each hold a maximum weight, you have to ask or estimate each person's weight. On the chart below, you record the weights of different 10-year-old students who went on the ride.

62	70	71
66	64	70
65	68	67
63	49	69
69	70	56
71	72	74
73	75	80

You want to use these data to help you determine the approximate range of a 10-year-old's weight. What is the range in this set of data?

- A. 31  
 ○ B. 67.8  
 ○ C. 69  
 ○ D. 70

- 35 Look at the graph below:



Based on the trends in the graph, predict the amount of solid waste that will be generated in the year 2000. Give reasons for your answer.

Amount of solid waste that will be generated: \_\_\_\_\_

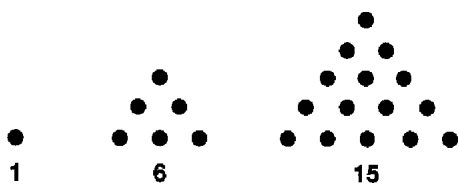
- 42 Which group of individuals would be the most reasonable sample in a survey to determine the most popular TV show among teens today?

- A. 100 students in a TV production class at a college  
 ○ B. 100 high school students from different classes  
 ○ C. 200 parents at a high school open house  
 ○ D. 200 people shopping at a TV store

# Algebraic Sense

## Grade 7 Assessment ... Practice Items

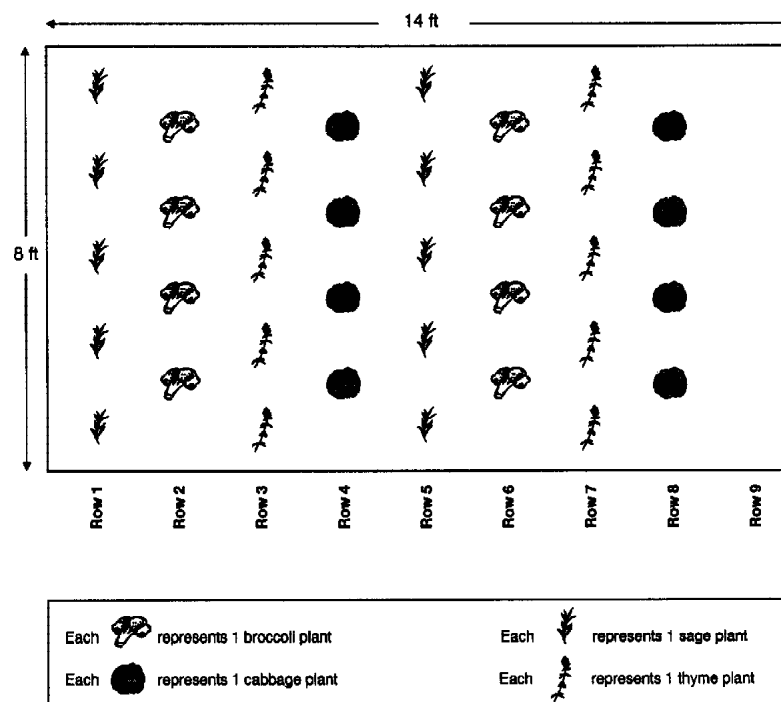
- 5 The ancient Greeks discovered that certain numbers, when arranged in dot patterns, form definite shapes. **Triangular numbers**, for example, have dot patterns that can be arranged into triangles. A sequence of triangular numbers is shown below.



What is the next triangular number in this sequence? Clearly explain or show the reason for your answer.

Next triangular number: \_\_\_\_\_

- 14 Samuel needs to finish planting his garden. If he continues the pattern shown below, which of these should he plant in Row 9?



- A. 5 sage plants
- B. 4 sage plants
- C. 5 thyme plants
- D. 4 thyme plants

- 22 Sue has 3 more dollars than John and together they have \$24.50. Which of these equations could you use to find the amount of money John has?

$j = \text{the amount of money John has}$

- A.  $j + (3 \times j) = \$24.50$
- B.  $2 \times (j + 3) = \$24.50$
- C.  $j + (j + 3) = \$24.50$
- D.  $3 \times j = \$24.50 + j$

- 21 Stephanie empties her bank and finds she has a total of 36 coins. She has 9 fewer dimes than quarters, 3 times more nickels than dimes, and no pennies. Which of the following equations would give the number of quarters ( $q$ ) she has?

- A.  $q + (q - 9) + 3 \times (q - 9) = 36$
- B.  $q + (q + 9) + 3 \times (q + 9) = 36$
- C.  $q + (q - 9) + (3 \times q) = 36$
- D.  $q + (q + 9) + (3 \times q) = 36$

- 38 The following formula shows how the number of chirps ( $n$ ) that a cricket makes in 1 minute is related to the outside temperature ( $T$ , in degrees Fahrenheit).

$$T = \frac{n}{4} + 40$$



How warm is it outside if a cricket chirps 72 times in 1 minute?

- A. 18° F
- B. 28° F
- C. 58° F
- D. 112° F

- 41 Which statement best summarizes the rule for the following sequence of numbers?

1, 4, 9, 16, 25, 36, . . .




- A. Each term in the sequence is the sum of the two terms before it.
- B. Each term in the sequence is the product of the two terms before it.
- C. Each term in the sequence is the sum of the term before it and an even number.
- D. Each term in the sequence is the product of a consecutive number multiplied by itself.

# Solves Problems

## Grade 7 Assessment ... Practice Items

10 Ms. Lonetree is planning a field trip for her scout troop. The group will drive downtown, park at a parking lot, and then take the monorail to a museum. At the museum, they will go on a guided tour and eat lunch. Then they will take the monorail back to the parking lot and head home.

Ms. Lonetree wants to estimate how much it will cost to park in the lot. The lot has the following rates:

	Cars	50¢ per hour
	Vans	75¢ per hour
	Buses	\$1.50 per hour

Identify 4 pieces of information Ms. Lonetree needs in order to estimate the total cost of parking in the lot.




(1)

(2)

(3)

(4)

23 Lisa put some fruit in a large bowl for her friends. The bowl had twice as many apples as oranges, and half as many pears as oranges. Altogether, there were 14 pieces of fruit in the bowl.

-  How many apples did Lisa put in the bowl? \_\_\_\_\_
-  How many oranges? \_\_\_\_\_
-  How many pears? \_\_\_\_\_

Explain or show how you found each answer.

31 Shama lives in Bellingham, Washington. Her older brother lives in Canberra, Australia. Last weekend, her brother called at 10:00 P.M. Saturday in Canberra, but it was only 4:00 A.M. Saturday in Bellingham. Shama told him she would call him back when she was more awake. Her brother told her to try to call him around 11:00 A.M. on Sunday (Canberra time).

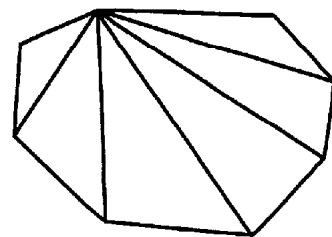
What time would it have been in Bellingham when it was 11:00 A.M. Sunday morning in Canberra?

- A. 5:00 in the morning on Sunday
- B. 5:00 in the afternoon on Sunday
- C. 5:00 in the morning on Saturday
- D. 5:00 in the afternoon on Saturday

44 Niki's family is planning a 1-week vacation. They are going to drive, and Niki has been asked to estimate the cost of the gasoline that will be used. Which choice best describes the information Niki should get?

- A. Estimate of average cost of gas near Niki's home  
Average distance per week the car has been driven recently  
Average number of gallons per week put in the car recently
- B. Estimate of average cost of gas near Niki's home  
Total distance they plan to drive  
Maximum number of gallons their car's tank can hold
- C. Estimate of average cost of gas near Niki's home  
Total distance they plan to drive  
Number of miles their car can go on a gallon of gas
- D. Estimate of average cost of gas near Niki's home  
Average distance per week the car has been driven recently  
Maximum number of gallons their car's tank can hold

32 Yolanda wants to find out if there is a relationship between the number of sides in a polygon and the number of triangles that can be formed by drawing diagonals from a common vertex. She starts by drawing 1 type of polygon and all the diagonals from 1 vertex, as shown below.



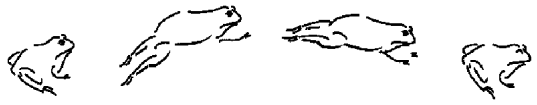
Yolanda notes that for this polygon there are 8 sides, 5 diagonals, and 6 triangles.

- Clearly describe a strategy Yolanda could use to search for the relationship between the number of sides in **any** polygon and the number of **triangles** that can be formed by diagonals drawn from a common vertex.
- Then describe this relationship using words, numbers, and/or pictures.

# Reasons Logically

## Grade 7 Assessment ... Practice Items

12 At camp, Juanita and her friends raced bullfrogs. She recorded the times for each frog for the first 3 races, as shown below.

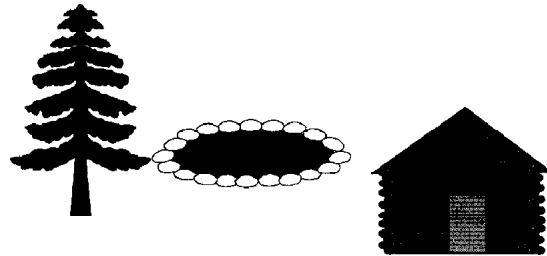


Bullfrog	Time (seconds)		
	Race 1	Race 2	Race 3
Wart	10	9	8
Streak	8	8	8
Doolittle	9	8	7
Hopalong	7	8	9

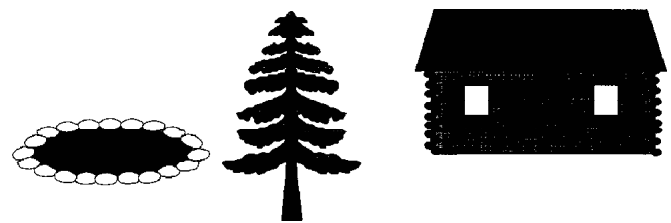
What trends do you see in the finishing times? Describe the trends and use them to predict the outcome of the fourth race for each frog.

19 Chaska, Darnell, and Leah are planning to go on a mountain bike ride tomorrow. They agree to meet at the nature center in the morning. The nature center is set in an open square area. Next to the nature center cabin is a large spruce tree and a fish pond. Both Chaska and Darnell have been to the nature center before, but they approach it from different directions. Each describes to Leah what he sees when approaching the nature center.

Chaska comes from the south and sees the following:

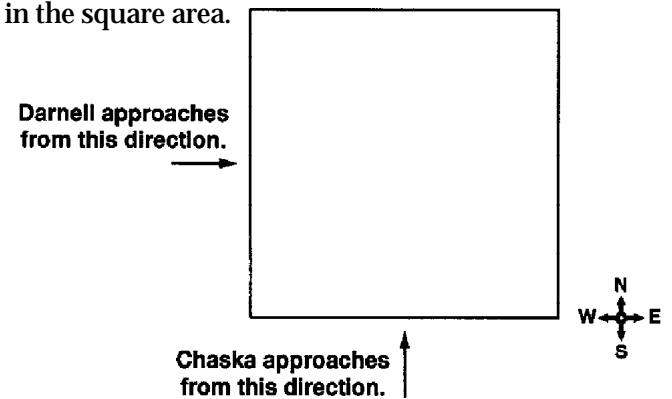


Darnell comes from the west and sees the following:



Leah has never been to the nature center, but has determined that she will likely approach the area from the east or from the north. She asks how the tree, the fish pond, and the cabin should be positioned if she approaches from either of these directions.

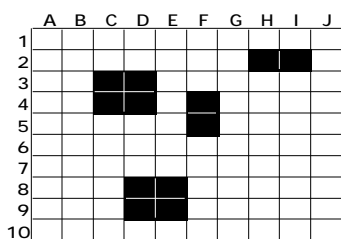
Below show how the tree, the fish pond, and the cabin are positioned in the square area.



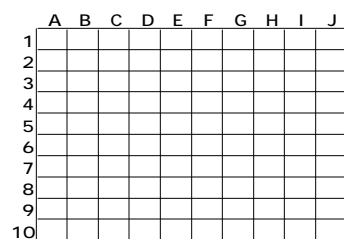
Explain or show what Leah should see if she approaches from the east.

Now explain or show what Leah should see if she approaches from the north.

Use the pictures below to answer questions 29 - 30)  
(See Probability & Statistics Poster, #27-28)



Player A's grid



Player B's grid

■ = mud puddles

29 What is the **greatest** possible number of steps that could be taken before stepping on more than one mud puddle square?

- A. 89
- B. 88
- C. 12
- D. 10

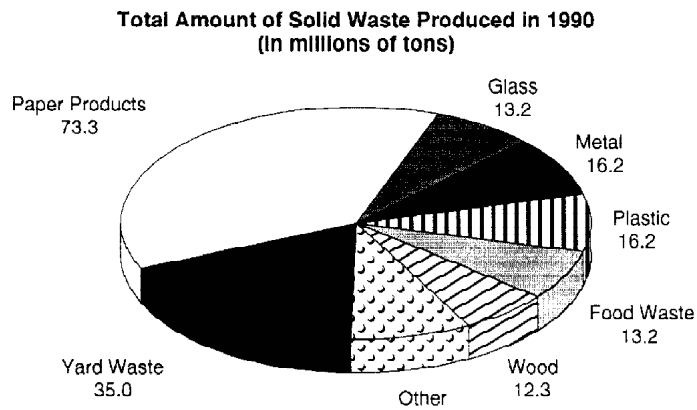
30 Player B has taken his first five steps, which have all been safe. He says that the probability of the next step being **safe** is 83 out of 95. Do you agree with him?

- A. No, he has stepped on five squares, so you have to subtract 5 from 100 (the total number of squares). Since there are still 12 unsafe squares, the probability is 12 out of 95.
- B. Yes, because the total number of safe steps is 88, and since he has already taken 5 steps, the number of safe steps left is 83. The total number of squares left on the grid is 95. Therefore, the probability is 83 out of 95.
- C. No, since he has stepped on 5 squares, you should subtract 5 from just the total number of squares, which is 100. The number of unsafe squares is still 88. So the probability is 88 out of 95.
- D. Yes, since he has already taken 5 steps, you subtract 5 from 88, which was the original number of safe steps. Then you add 5 to 90 to find the total number of squares that both players could step on at the start of the game.

# Communicates Understandings

## Grade 7 Assessment ... Practice Items

11 Look at the graph and table below.



**Total Amount of Solid Waste Recycled in 1990**

Material	Amount Recycled (in millions of tons)	Percent of Material Recycled
Paper Products	20.9	28.5%
Glass	2.6	19.7%
Metal	3.7	22.8%
Plastic	0.4	2.5%
Food Waste	0.0	0.0%
Yard Waste	4.2	12.0%
Wood and Other	1.6	5.6%

How much yard waste was **not** recycled in 1990?

- A. 30,800,000 tons
- B. 35 million tons
- C. 4,200,000 tons
- D. 30.8 tons

40 The following table shows the prices for the items sold at Washington Jr. High School's bake sale, sponsored by the student council.

Item	Price Each	Price by the Box*
Doughnuts	\$.50	\$5.00
Cookies	\$.10	\$1.00
Cakes	\$5.00	-
Pies	\$8.00	-

\*A box contains 1 dozen.

By the end of the first day, the student council had sold 20 single doughnuts, 5 boxes of doughnuts, 5 single cookies, 20 boxes of cookies, 11 pies, and 10 cakes.

On graph paper, construct a bar graph to clearly show how much **money** was collected for each type of food on the first day. You may use the box below to do your computations. (Be sure to label both axes and scale and give your graph an appropriate title.)

39 The following table shows the prices for the items sold at Washington Jr. High School's bake sale, sponsored by the student council.

Item	Price Each	Price by the Box*
Doughnuts	\$.50	\$5.00
Cookies	\$.10	\$1.00
Cakes	\$5.00	-
Pies	\$8.00	-

\*A box contains 1 dozen.

Jeremiah is buying 11 doughnuts. Crystal tells him that if he buys a box of 12 doughnuts instead of 11 individual doughnuts, he will save money. Jeremiah says he does not believe her.

Clearly explain to Jeremiah why Crystal is correct. Use words, numbers, and/or pictures.

46 Akiro's grandparents gave him a \$40 gift certificate to Colorful City Music. The store uses a color system to mark the items with their prices. The charts the customers must use to figure out the prices are shown below.

**COLORFUL CITY MUSIC**

**Color Key for:**

<b>CDs</b>	<b>Tag Color</b>
New & Popular Releases	Red
Regular CDs	Blue
<b>Cassette Tapes</b>	
New & Popular Releases	Yellow
Regular Cassette Tapes	Green

Tag Color	Price
Green	3 for \$19
Yellow	\$9 each
Blue	2 for \$19
Red	\$15 each

**LOW PRICES!**

Akiro uses the gift certificate plus some of his own money to buy the following: 1 new-release CD, 2 regular CDs, and 2 regular cassette tapes. Not including tax, how much of his own money did Akiro need to use?

- A. \$3.33
- B. \$6.67
- C. \$12.00
- D. \$13.00

# Makes Connections

## Grade 7 Assessment ... Practice Items

- 7 As shown on the calendar, Tony is leaving for California for a vacation. He has asked his friend Katie to look after his pet bird Spot while he is away. Also shown is the note Tony wrote to Katie to explain how to take care of Spot.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	Leave for California 5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	Return from California 26
27	28	29	30	31		

Katie,  
Please give Spot fresh water every day. Give him  $\frac{1}{2}$  cup of fresh seed every other day, starting on Sunday the 6th. His seed is in the 1-quart jar.  
Thanks!  
Tony

On the morning of Saturday the 5th, Tony gives Spot fresh water. He realizes he needs to check to make sure there is enough seed left in the 1-quart jar for the time he will be away. The 1-quart jar is shown. (4 cups = 1 quart)



Using all the information provided, tell whether enough seed is left in the jar for Katie to feed Spot as instructed. **Explain in detail** how you found your answer using words, numbers, and/or pictures.

Is there enough seed? \_\_\_\_\_

- 8 A block of wood was cut into different size pieces. Figure 1 below shows the dimensions of one of the pieces. It has a mass of 10 grams. What is the mass of the piece of wood in Figure 2?

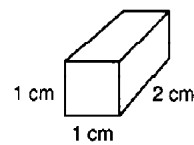


Figure 1

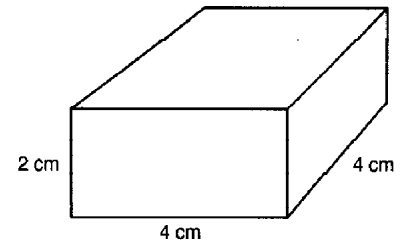
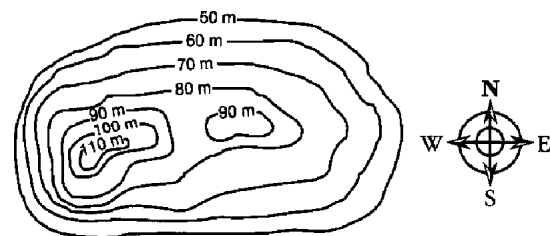


Figure 2

- A. 32 grams  
 B. 48 grams  
 C. 80 grams  
 D. 160 grams

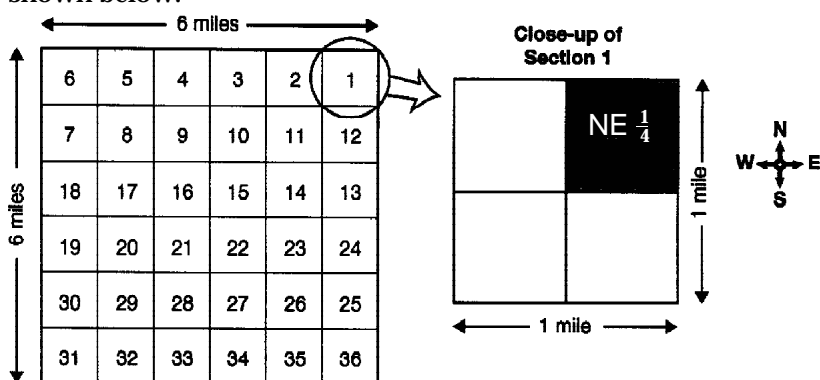
- 13 A contour map represents the surface features of a land region. The contour lines on a contour map connect points that are at the same elevation (height). Contour lines that are close together represent a steeper slope than contour lines that are far apart. The contour map of a certain surface feature is shown below.



Which of the following could be a side view of the surface feature represented by this contour map?

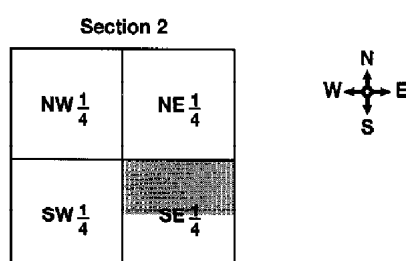
- A. West End East End  
Elevation at base = 50 m
- B. West End East End  
Elevation at base = 50 m
- C. West End East End  
Elevation at base = 50 m
- D. West End East End  
Elevation at base = 50 m

- 36 Land in rural townships is usually divided into sections, as shown below.



An area within a section is described by its **directional location** (N, S, E, W) and **fractional size**. For instance, the shaded area of Section 1 above is described as the NE  $\frac{1}{4}$  of Section 1.

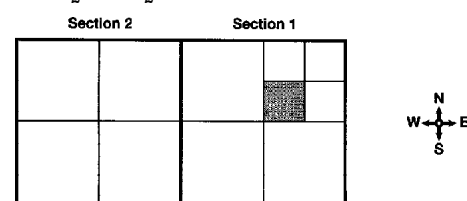
The shaded area in Section 2 is described as the N  $\frac{1}{2}$  of the SE  $\frac{1}{4}$  of Section 2.



- 36 Continued ...

In the diagram below, shade in the following areas:

- The E  $\frac{1}{2}$  of NW  $\frac{1}{4}$  Section 2
- The S  $\frac{1}{2}$  of S  $\frac{1}{2}$  of Section 2



What is the directional location and fractional size of the shaded area in Section 1?

This shaded area is what fractional part of Section 1? \_\_\_\_\_