



مدرسة السلمة للحلقة الثانية والتعليم الثانوي بنات
AL-SALAMAH GIRLS' SCHOOL FOR BASIC
AND SEC ONDARY EDUCATION.C2 & C3

Grade 6 ADV

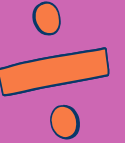
EOT 3

Coverage

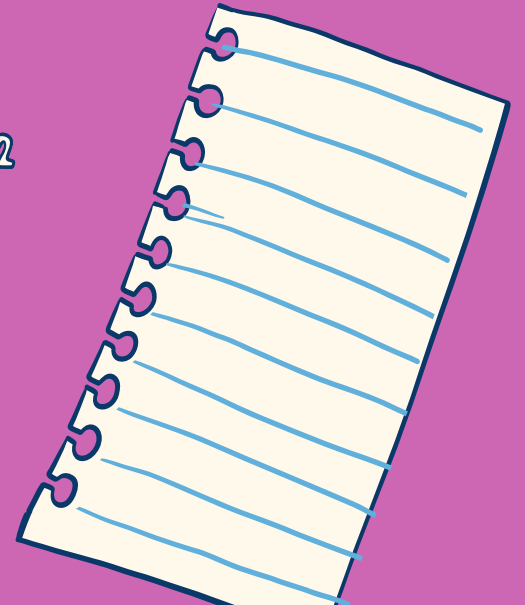
Questions

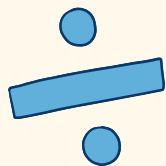
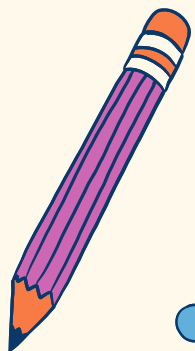
2023-2024

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$



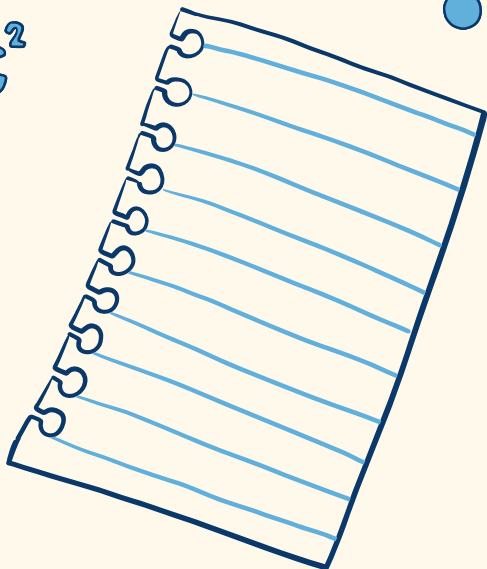
$$a^2 + b^2 = c^2$$



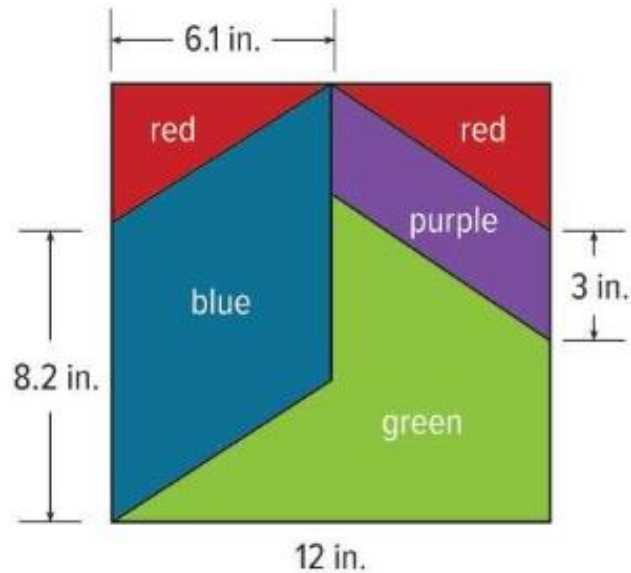


MCO

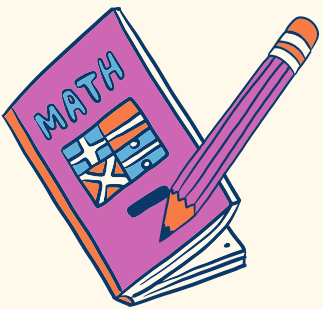
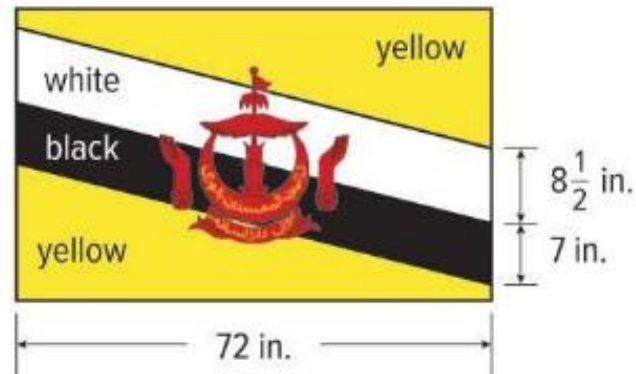
$$a^2 + b^2 = c^2$$



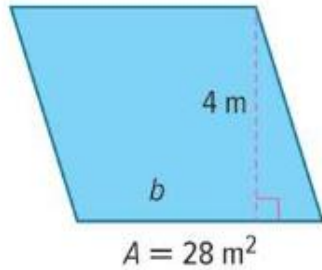
1. The pattern shows the dimensions of a quilting square that Nakida will use to make a quilt. How much blue fabric will she need to make one square? (Example 1)



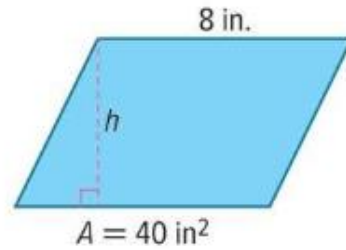
2. A group of students is painting the flag of Brunei for a geography project. Joseph is responsible for painting only the background colors of the flag. How many square inches will he cover with white paint? (Example 1)



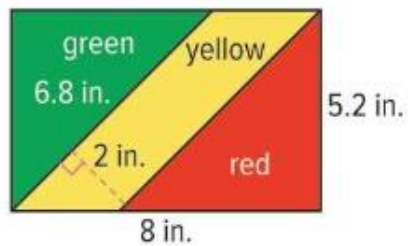
3. Find the missing dimension of the parallelogram. (Example 2)



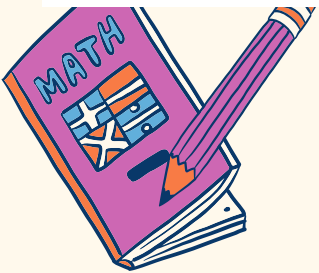
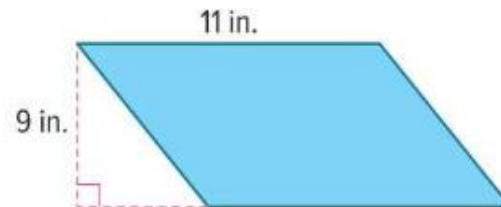
4. Find the missing dimension of the parallelogram. (Example 2)



5. Find the area of the yellow striped region of the flag of the Republic of the Congo.

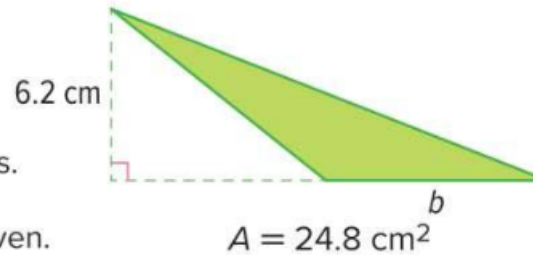


6. **Open Response** What is the area of the parallelogram?



Example 3 Find Missing Dimensions of Triangles

Find the missing dimension of the triangle.



Step 1 Identify the given values.

The height and the area are given.
You need to find the base.

Step 2 Find the missing dimension.

$$A = \frac{1}{2}bh \quad \text{Area of a triangle}$$

$$24.8 = \frac{1}{2}b(6.2) \quad \text{Replace } A \text{ and } h \text{ with the known values.}$$

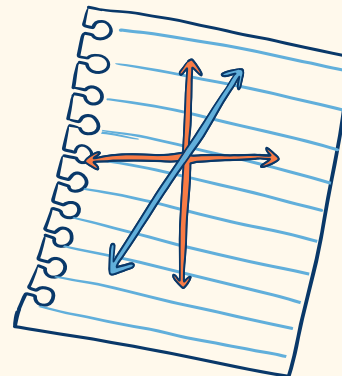
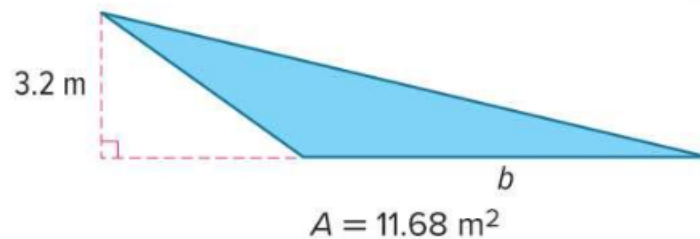
$$49.6 = b(6.2) \quad \text{Multiply each side by the reciprocal of } \frac{1}{2}, 2.$$

$$8 = b \quad \text{Divide each side by 6.2.}$$

So, the base of the triangle is _____ centimeters.

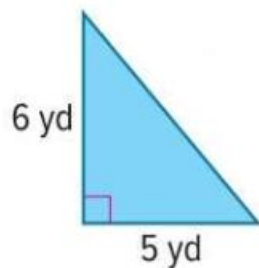
Check

Find the missing dimension of the triangle.

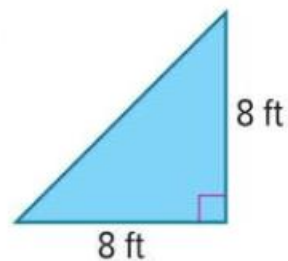


Find the area of each triangle. (Example 1)

1.



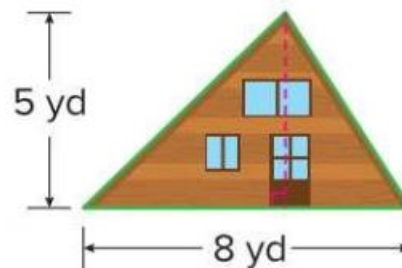
2.



3. Tameeka is in charge of designing a school pennant for spirit week. What is the area of the pennant? (Example 2)

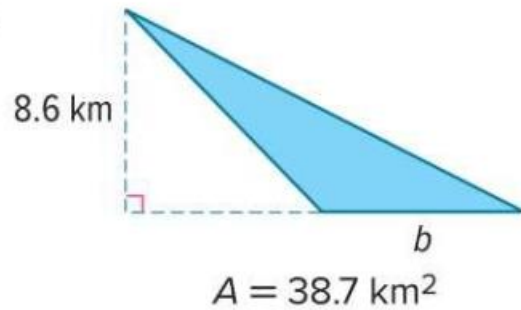


4. Norma has an A-frame cabin. The back is shown below. If the total area of the windows and doors is 3.5 square yards, how many square yards of paint will she need to cover the back of the cabin? (Example 2)

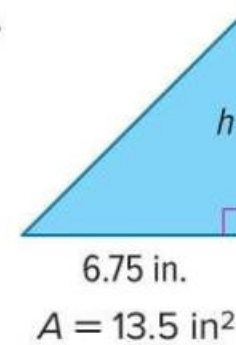


Find the missing dimension in each triangle. (Example 3)

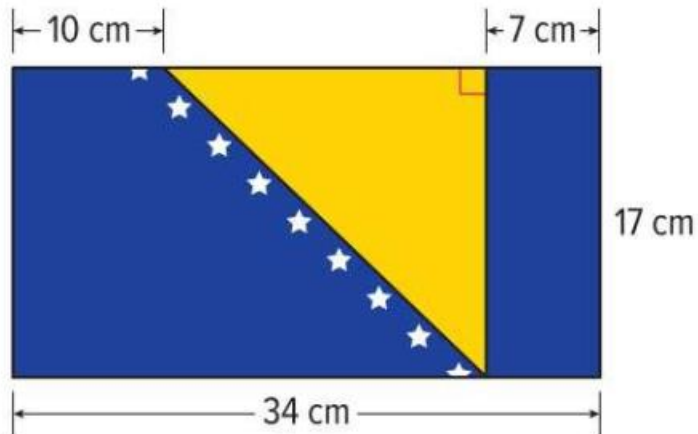
5.



6.

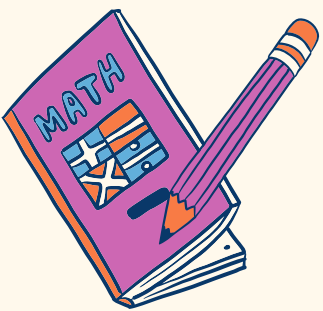
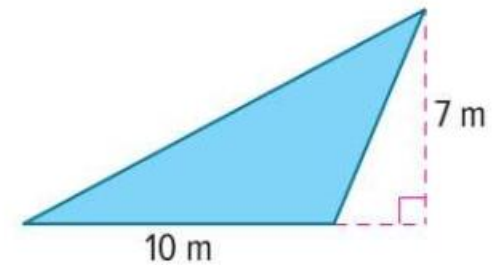


7. The flag of Bosnia and Herzegovina is shown. What is the area of the triangle on the flag?



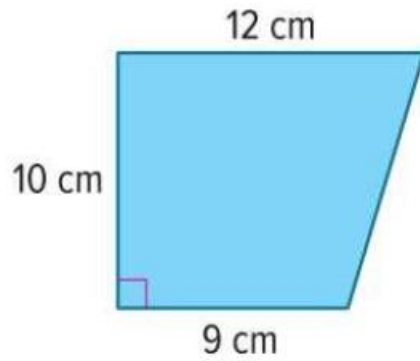
Test Practice

8. **Open Response** What is the area of the triangle?

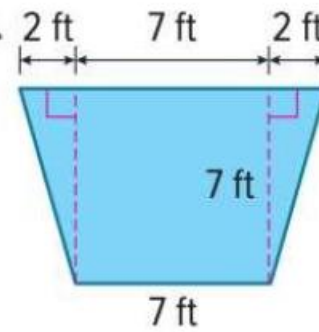


Decompose each trapezoid to find its area. (Example 1)

1.

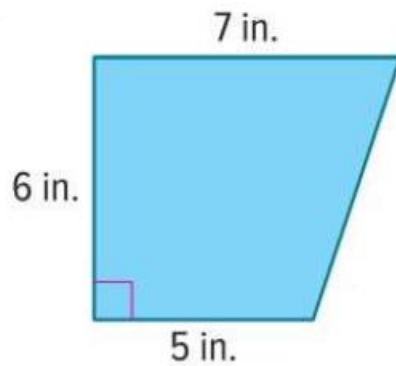


2.

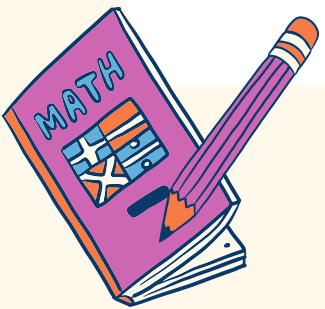
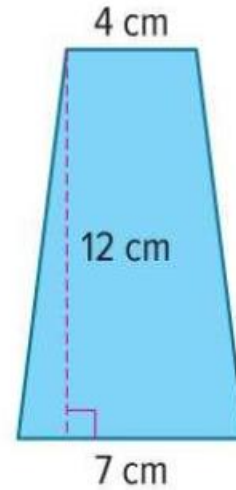


Find the area of each trapezoid. (Example 2)

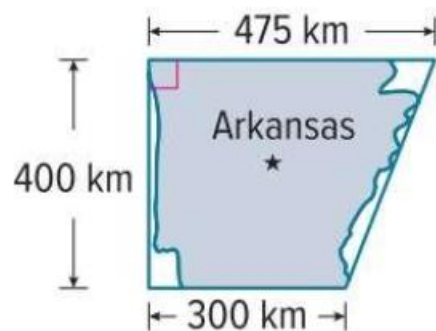
3.



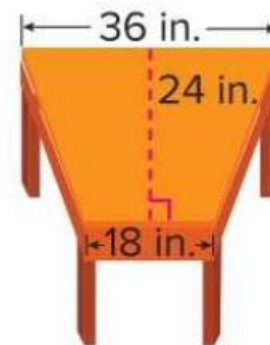
4.



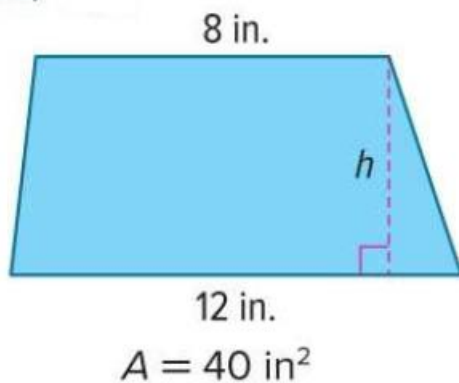
5. The shape of Arkansas resembles a trapezoid. What is the approximate area of Arkansas? (Example 3)



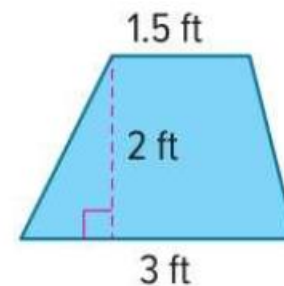
6. The top of the desk shown is in the shape of a trapezoid. What is the area of the top of the desk? (Example 4)



7. Find the missing dimension of the trapezoid. (Example 5)



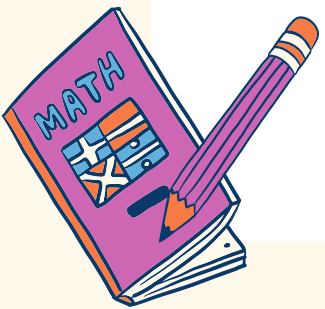
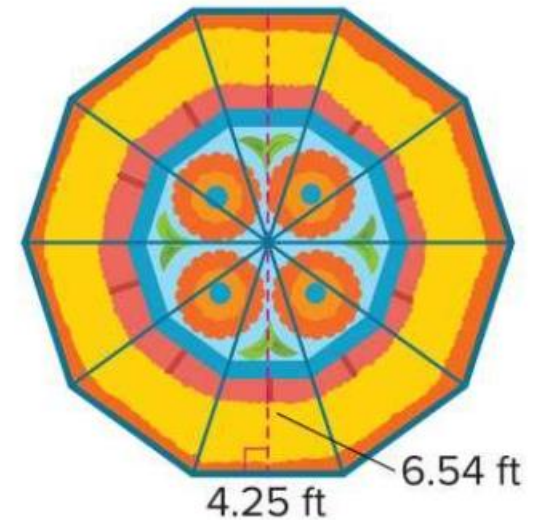
8. **Open Response** Ciro made a sign in the shape of a trapezoid. What was the area of Ciro's sign?



1. Kendra knitted the coaster shown as a present for her grandmother. The coaster is shaped like a regular hexagon. Each side of the hexagon is 3.5 inches. Find the area of the coaster. Round to the nearest hundredth. (Example 1)

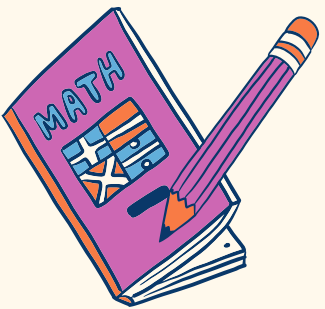
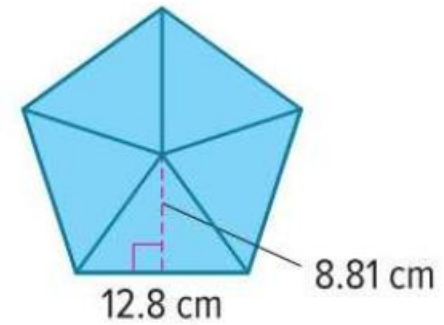


2. Paul bought a new rug in the shape of a regular decagon. Each side of the decagon is 4.25 feet. Find the area of the rug. Round to the nearest hundredth. (Example 1)

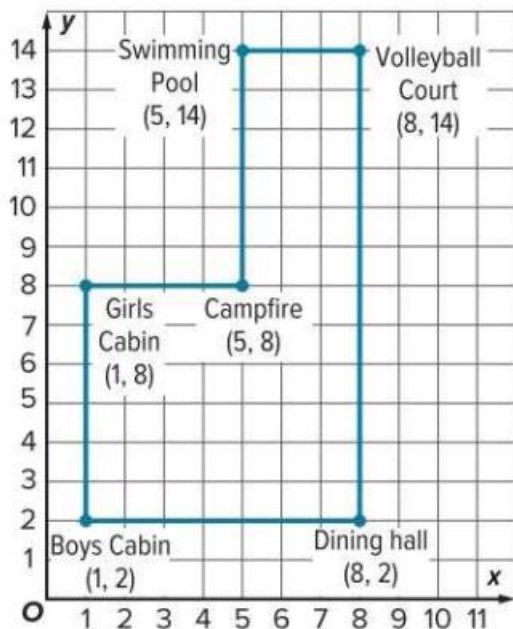


Test Practice

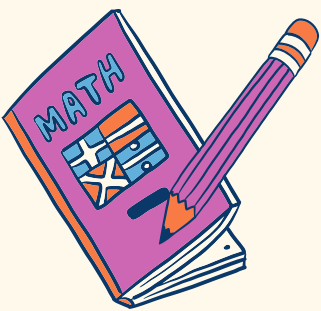
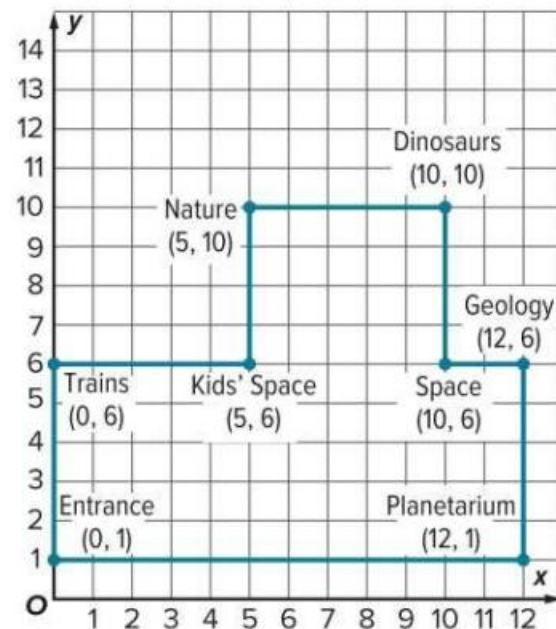
- 3. Open Response** A regular pentagon is shown.
What is the area of the pentagon?



1. Find the perimeter of the summer camp shown on the coordinate plane. (Example 1)



2. Find the perimeter of the science center shown on the coordinate plane. (Example 1)



3. A rectangle has vertices $W(2, 7)$, $X(2, 0)$, $Y(6, 0)$, and $Z(6, 7)$. Use the coordinates to find the perimeter of the rectangle. (Example 2)

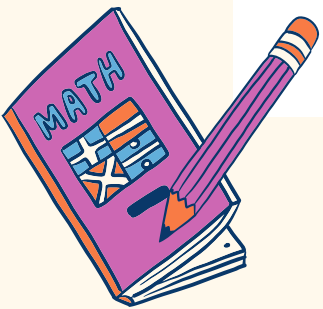
4. A rectangle has vertices $H(3, 0)$, $I(3, 7)$, $J(6, 7)$, and $K(6, 0)$. Use the coordinates to find the perimeter of the rectangle. (Example 2)

5. A polygon has vertices $A(3, 3)$, $B(3, 6)$, and $C(9, 3)$. Find the area of the polygon. (Example 3)

Test Practice

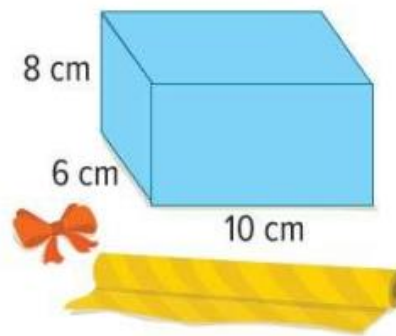
6. **Multiple Choice** A polygon has vertices $J(2, 3)$, $K(4, 3)$, $L(4, 7)$, and $M(2, 7)$. What is the area of the polygon? (Example 3)

- A 8 square units
- B 10 square units
- C 12 square units
- D 16 square units



Example 2 Surface Area of a Rectangular Prism

Jon is covering the faces of the gift box shown with wrapping paper.



Use the net to determine the minimum amount of wrapping paper he will need to cover the box.

Step 1 Find the area of each face.

Front and Back

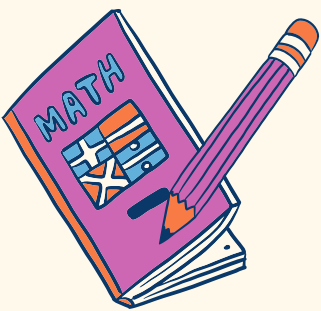
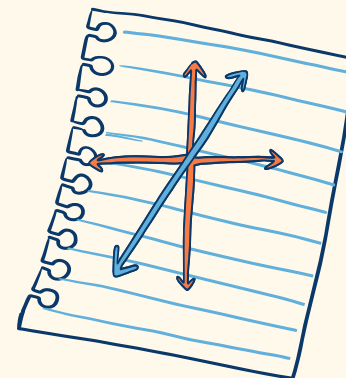
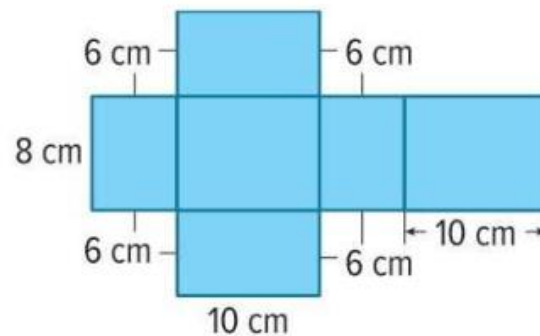
The front and back faces are congruent. Find the area of one face. Then multiply by 2 to find the total area of the front and back faces.

$A = \ell h$ The front face has dimensions ℓ and h .

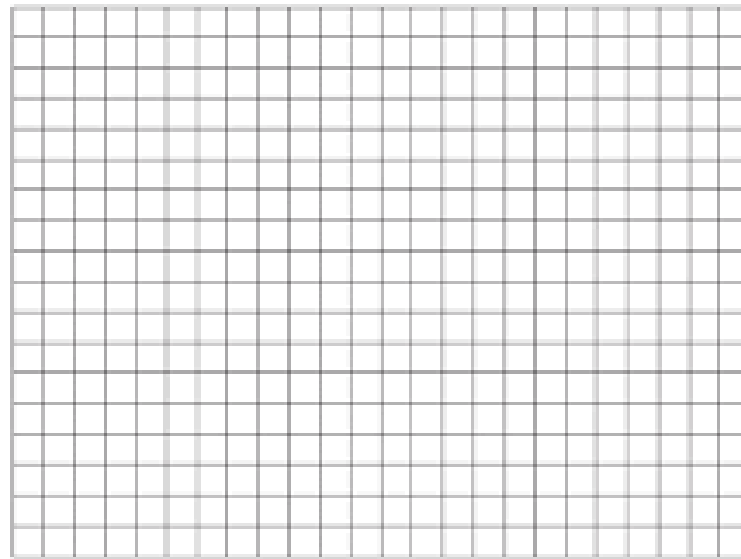
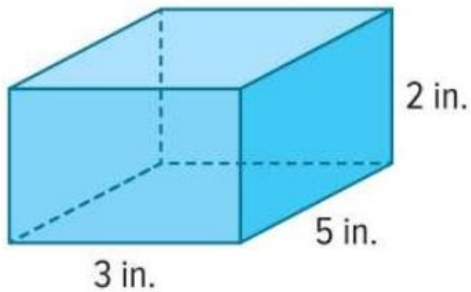
$= 10(8)$ Replace ℓ with 10 and h with 8.

$= 80$ Multiply. The area of the front face is 80 cm^2 .

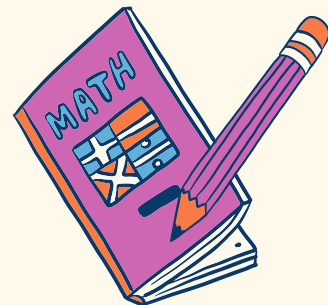
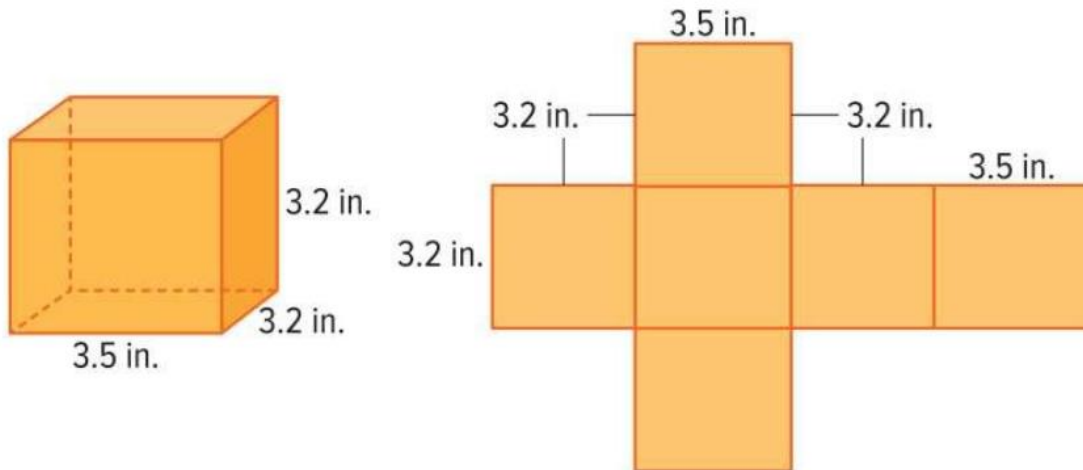
The combined area of the front and back faces is $2(80)$, or 160 square centimeters.



1. Draw and label a net to represent the rectangular prism. Let each grid unit represent 1 inch. (Example 1)

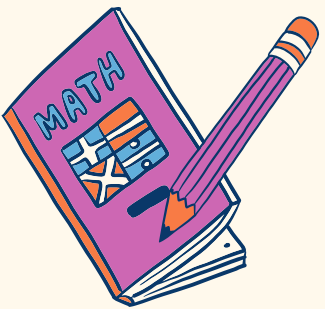
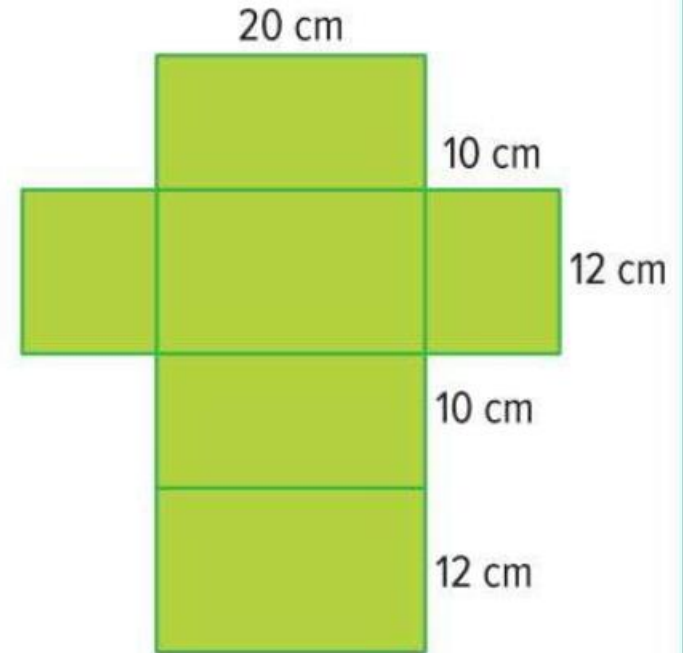
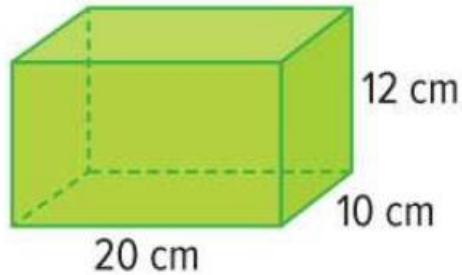


2. Trey is using cardboard to construct building blocks that are shaped like rectangular prisms. Use the net to determine the minimum amount of cardboard he will need to construct one block. (Example 2)



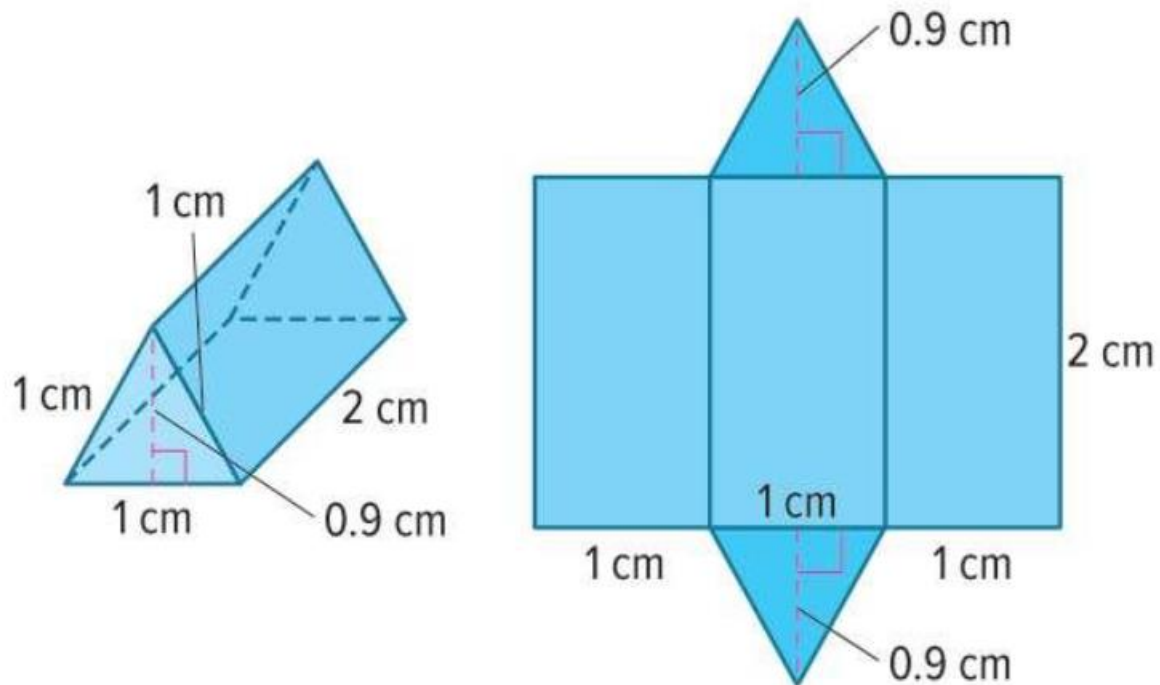
Test Practice

3. Open Response Cody is painting the box shown for part of his art project. If he paints all of the surfaces, how many square centimeters will he paint? Use the net to find the surface area of the rectangular prism.

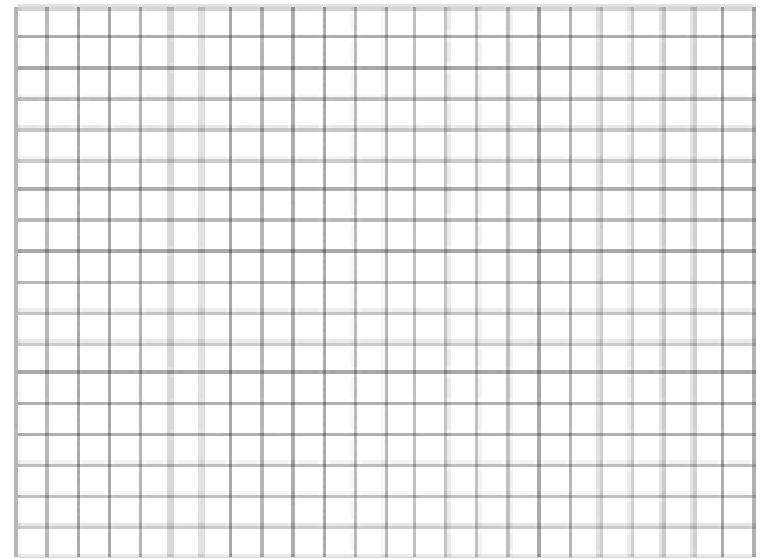
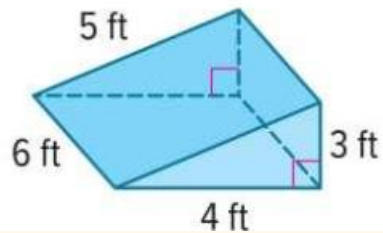


Example 3 Find Surface Area of a Triangular Prism

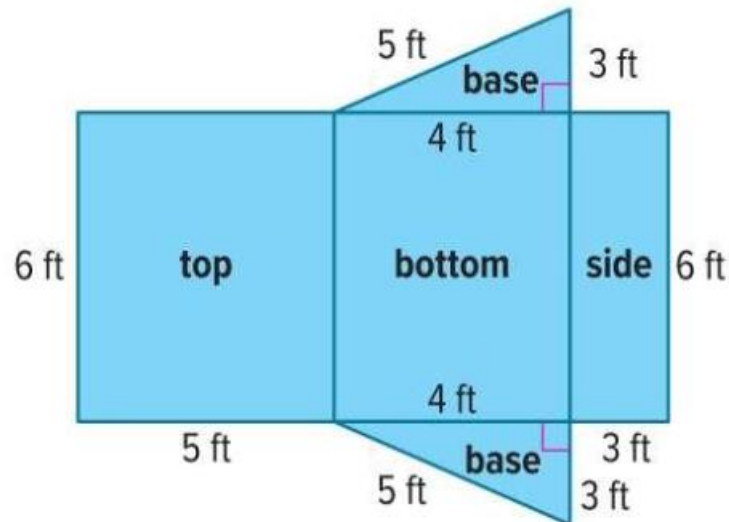
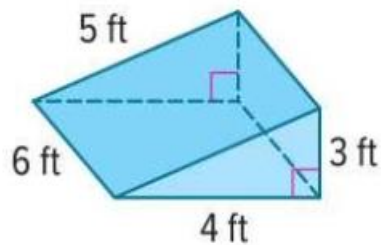
Use the net to find the surface area of the triangular prism.



1. Draw and label a net to represent the triangular prism. Let each grid unit represent 1 foot. (Example 1)

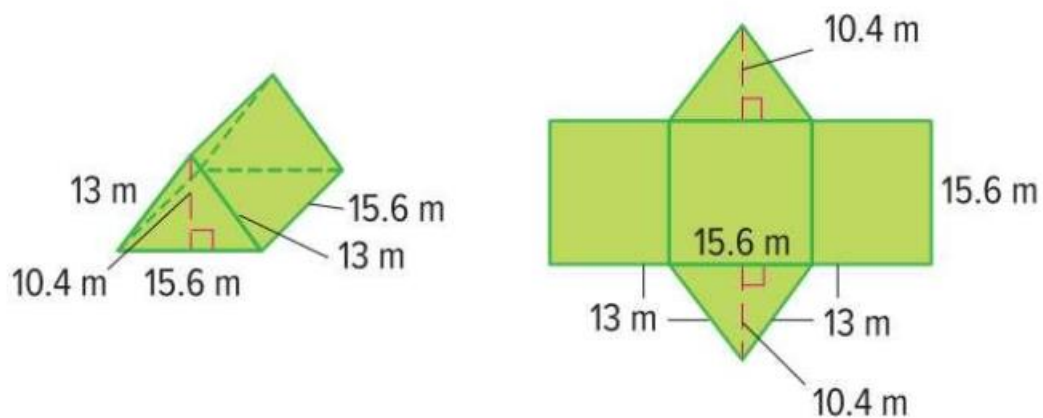


2. Use the net to find the surface area of the triangular prism.
(Example 2)



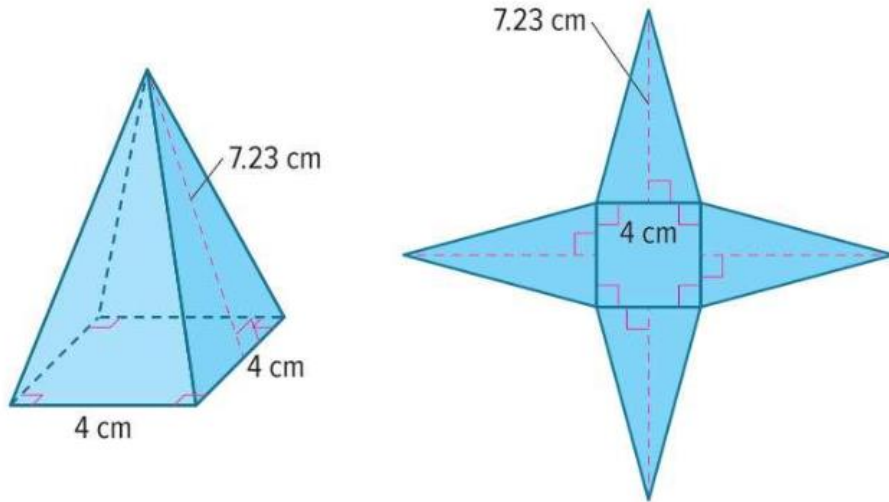
Test Practice

- 3. Open Response** Use the net to find the surface area of the triangular prism in square meters. (Example 3)

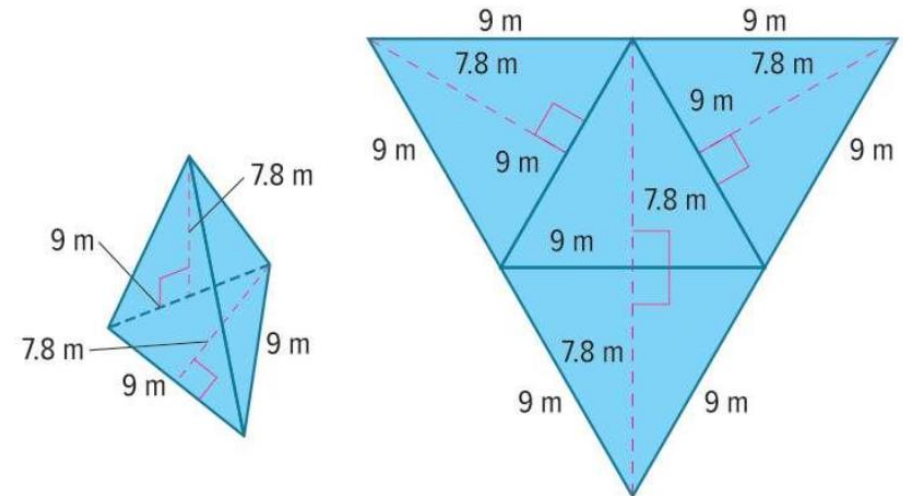


Example 3 Find Surface Area of a Square Pyramid

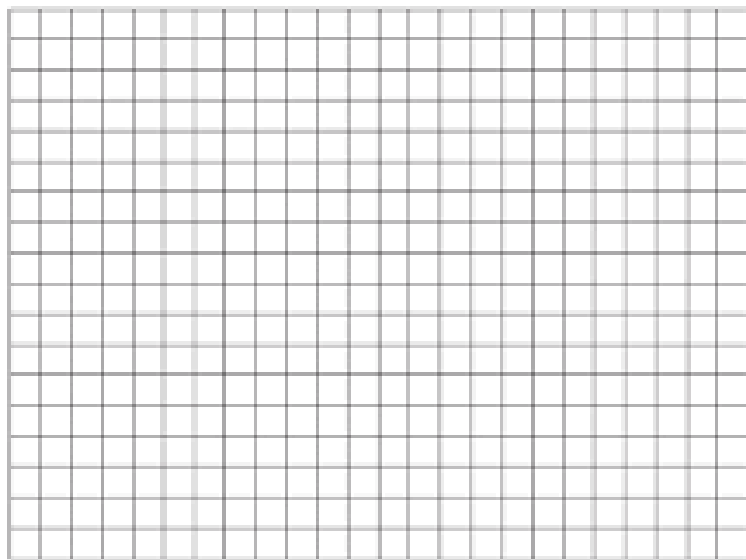
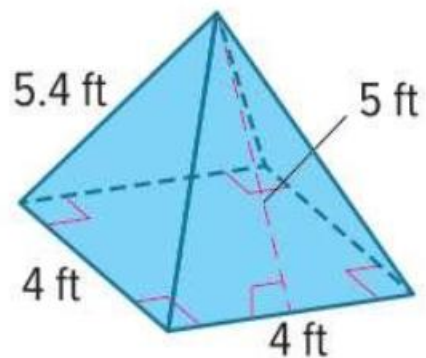
Use the net to find the surface area of the square pyramid.

**Example 4** Find Surface Area of a Triangular Pyramid

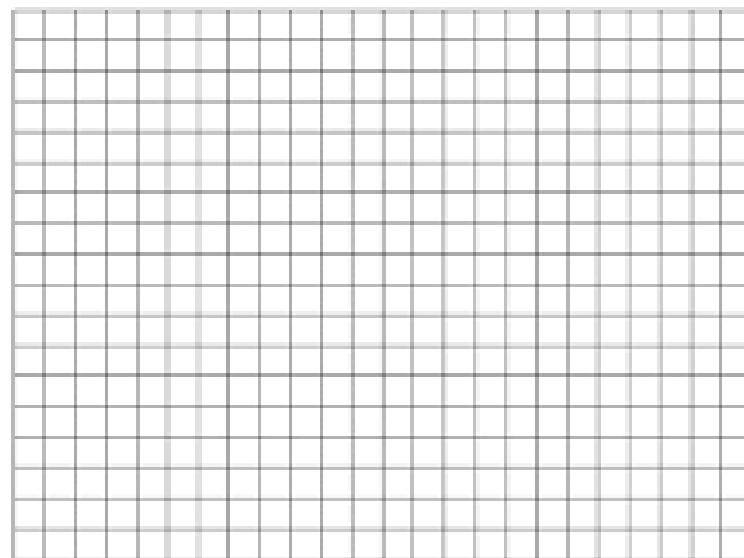
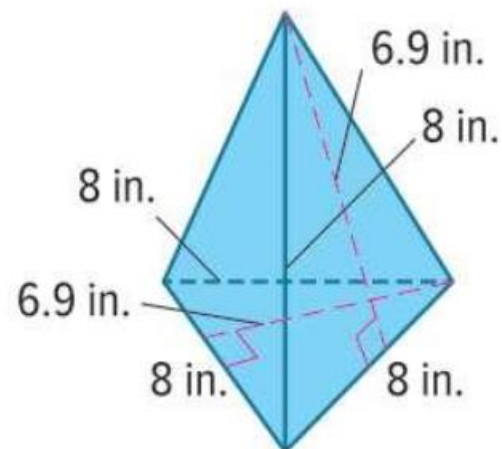
Use the net to find the surface area of the triangular pyramid.



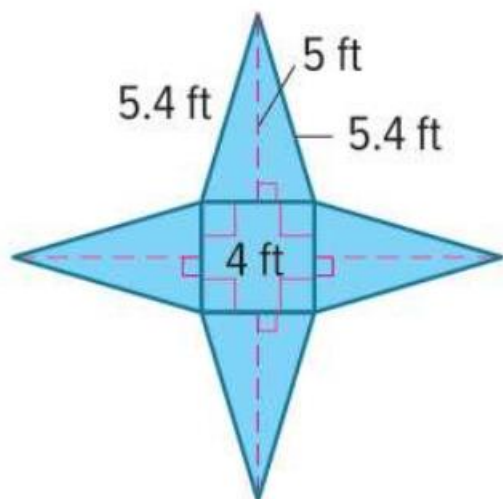
1. Draw and label a net to represent the square pyramid. (Example 1)



2. Draw and label a net to represent the triangular pyramid. (Example 2)

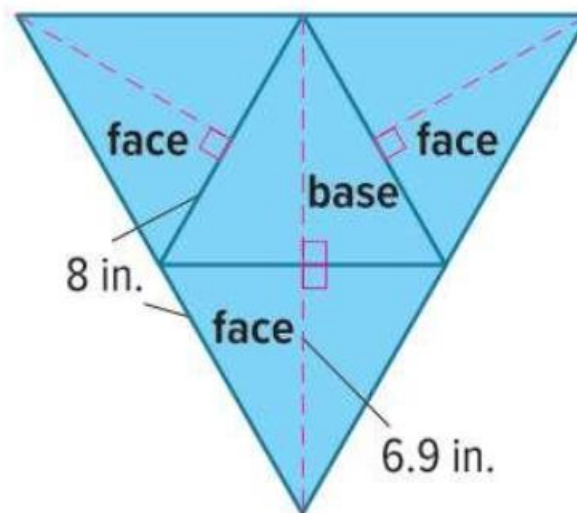


3. Use the net to find the surface area of the pyramid. (Example 3)



Test Practice

4. **Open Response** Use the net to find the surface area of the pyramid in square inches. (Example 4)

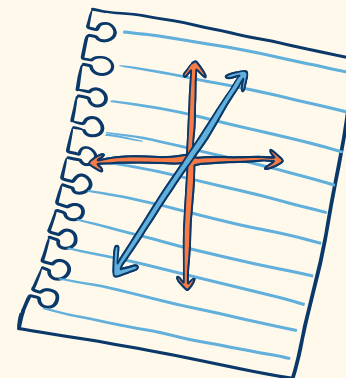


1. Chris surveyed the members of his tennis team by asking the question *In how many tennis tournaments have you played?*. The results are shown in the table. Construct a dot plot of the data and summarize the results. (Example 1)

Number of Tennis Tournaments					
0	2	1	4	0	1
1	0	3	2	6	0

2. The table shows the results of asking a group of teachers the question *How many students are in your homeroom?*. Construct a histogram to represent the data. (Example 2)

Homeroom Class Size						
17	26	20	23	19	23	22
22	24	19	20	21	20	23

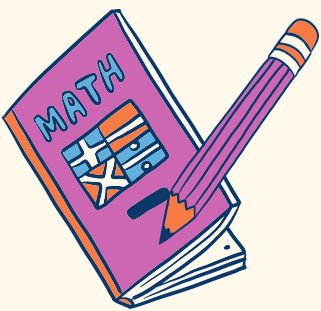


3. The table shows the results of asking a group of students the question *How many hours per month do you volunteer?*. Construct a histogram to represent the data. (Example 2)

Hours Spent Volunteering						
48	30	21	10	1	40	19
10	5	40	39	20	9	40
31	45	29	40	18	49	31
24	32	15	0	15	27	12

4. **Open Response** Petra surveyed the members of her dance class by asking the question *How many hours outside of class do you usually practice dance each week?*. The results are shown in the table. Construct a dot plot of the data.

Number of Hours				
1	3	4	5	2
2	2	4	3	1
3	3	2	4	2



Learn Find a Missing Data Value Using the Mean

You can use dot plots and bar diagrams to find a missing data value given the mean and the other data values. Consider the following problem.

Caitlin's first four quiz scores are shown in the table. What score does Caitlin need to earn on her fifth quiz to have a mean quiz score of 90?

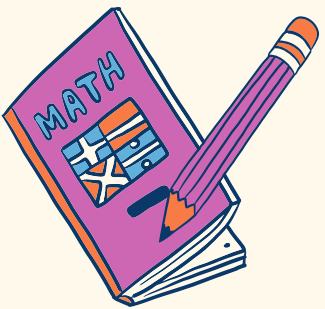
Caitlin's Quiz Scores				
88	95	93	80	?

Example 2 Find a Missing Data Value Using the Mean

The number of messages Alex sent on her phone each month for the past five months were 494, 502, 486, 690, and 478. Suppose the mean for six months was 532 messages.

How many messages did Alex send during the sixth month?

1. The number of cans collected over the weekend by each sixth grade homeroom was 57, 59, 60, 58, 58, and 56 cans. Find the mean number of cans collected. (Example 1)
2. Grace and her friends are comparing the number of pets they own. They have 1, 2, 0, 5, 1, 1 and 4 pets. Find the mean number of pets owned. (Example 1)
3. The amount Lucy earned babysitting each month for the past five months was \$225, \$280, \$240, \$180, and \$200. Suppose the mean for six months was \$220. How much did Lucy earn babysitting during the sixth month? (Example 2)
4. The average high temperature last week was 65 degrees Fahrenheit. The high temperatures for Sunday through Friday were 68, 70, 73, 45, 68, and 71 degrees Fahrenheit. What was the high temperature on Saturday? (Example 2)



5. The table shows the results of a survey about the number of E-mails sent in one day. Find the median number of E-mails sent per day. (Example 3)

Number of E-mails Sent Per Day						
20	24	22	27	21	27	20
27	22	23	20	22	24	26
23	26	27	22	27	20	25

7. The table shows the number of points scored by a basketball team in each game last season. Find the median number of points scored. (Example 4)

Number of Points					
64	41	52	63	44	54
42	67	44	68	43	61

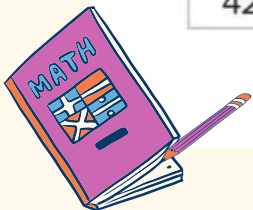
6. The table shows the number of students in each group on a school field trip. Find the median size of a group. (Example 3)

Number of Students in Each Group				
5	7	8	7	6
4	4	5	6	9
7	5	7	8	6
9	7	5	4	5

Test Practice

8. **Open Response** The number of points Seth has earned playing his favorite game is shown. Find the median of the data.

40, 28, 24, 37, 43, 26, 30, 36



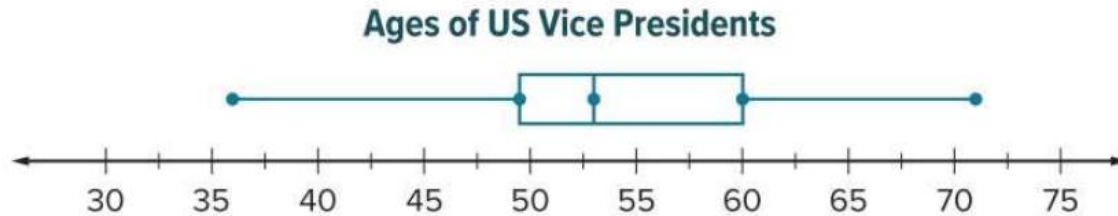
1. Cameron surveyed her friends about the number of apps they use. The responses were 15, 16, 18, 9, 18, 4, 19, 20, 17, and 36 apps. Use the range and interquartile range to describe how the data vary.

(Example 1)

2. The table shows the number of hours different animals spend sleeping per day. Use the range and interquartile range to describe how the data vary. (Example 1)

Time Animals Spend Sleeping (h)					
12	20	16	11	4	2

3. The box plot shows the ages of vice presidents when they took office. Describe the distribution of the data. What does it tell you about the ages of vice presidents? (Example 2)



4. The ages of children taking a hip-hop dance class are 10, 9, 9, 7, 12, 14, 14, 9, and 16 years old. Construct a box plot of the data. Then describe the distribution of the data. (Example 3)

1. The table shows the number of sunny days in various U.S. cities in the last month. Find the mean absolute deviation. Explain what the mean absolute deviation represents.

(Example 1)

Number of Sunny Days in Various Cities Last Month				
15	27	10	19	
24	21	28	16	

2. The table shows the number of flowers sold by each sixth grade homeroom. Find the mean absolute deviation. Explain what the mean absolute deviation represents.

(Example 1)

Number of Flowers Sold				
75	89	80	145	85
60	92	104	90	100

3. The table shows the number of wins of two school baseball teams over the last five years. Find the mean absolute deviation for each team. Then compare the variations.

	Number of Wins Per Season				
Bears	7	10	13	12	9
Saints	12	15	10	14	13

4. The table shows the number of canned goods each homeroom collected over seven days. Find the mean absolute deviation. Then compare the variations. Round to the nearest hundredth, if necessary. (Example 2)

	Number of Canned Goods Collected						
Room 101	57	52	40	42	37	54	47
Room 102	51	17	42	40	46	74	31

5. **Open Response** The table shows the number of Calories per serving of different snacks. What is the mean absolute deviation of the data set? Round to the nearest hundredth, if necessary.

Number of Calories					
61	42	52	27	35	23

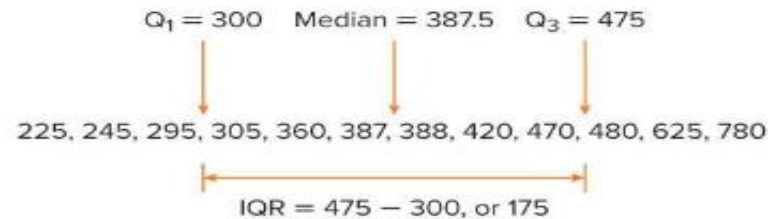
Learn Outliers

An **outlier** is a data value that is very far away from the other data values. It can be much greater in value or much less than the other values. Consider the data set shown.

225, 245, 295, 305, 360, 387, 388, 420, 470, 480, 625, 780

How do you know if either of the extreme values, 225 or 780, are considered outliers?

An outlier is defined as a value that lies more than 1.5 times the interquartile range either above Q_3 or below Q_1 .



Determine the upper and lower limits for the outliers.

Upper Limit

$$Q_3 + (1.5 \cdot \text{IQR})$$

$$= 475 + (1.5 \cdot 175)$$

$$= 475 + 262.5$$

$$= 737.5$$

Substitute.

Multiply.

Simplify.

Lower Limit

$$Q_1 - (1.5 \cdot \text{IQR})$$

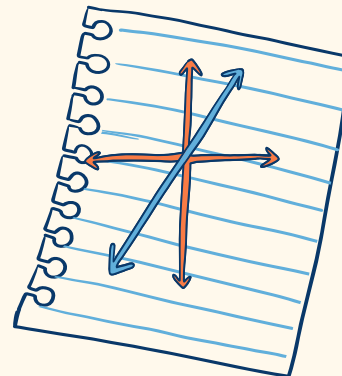
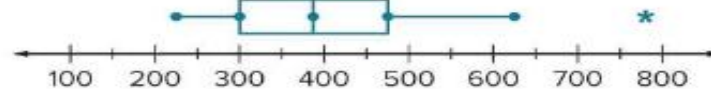
$$= 300 - (1.5 \cdot 175)$$

$$= 300 - 262.5$$

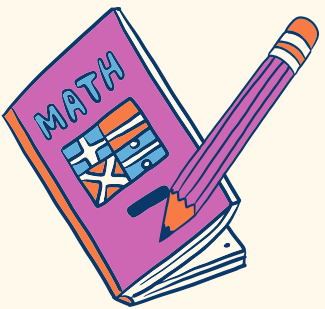
$$= 37.5$$

Any data values that are greater than 737.5 or less than 37.5 are outliers. So, the value 780 is an outlier. Because the data set does not contain any values that are less than 37.5, the only outlier is 780.

The box plot represents the data set. Outliers are indicated with an asterisk (*).



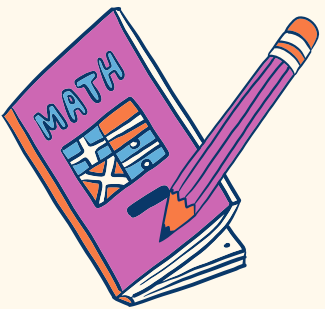
1. Last week, Joakim spent 40, 25, 60, 30, 35, and 40 minutes practicing the piano. Identify any outliers in the data. (Example 1)
2. Last month, a basketball team scored 83, 84, 85, 87, 89, 88, 67, 79, and 81 points in their games. Identify any outliers in the data. (Example 1)
3. Abrianna sold 20, 23, 18, 4, 17, 21, 15, and 56 boxes of cookies after different football games. Identify any outliers in the data. (Example 1)
4. Last week a certain pet store had 52, 72, 96, 21, 58, 40, and 75 paying customers. Identify any outliers in the data. (Example 1)

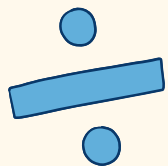
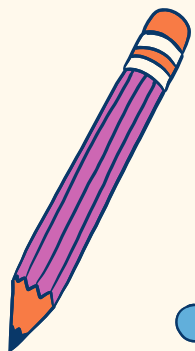


5. The prices of trees that Sahana bought are \$46, \$39, \$40, \$45, \$44, \$68, and \$51. Calculate the mean and median with and without the outlier. Round to the nearest tenth, if necessary. Choose the measure that best describes the center. (Example 2)
6. The prices of backpacks are \$37, \$43, \$41, \$36, \$44, and \$70. Calculate the mean and median with and without the outlier. Round to the nearest tenth, if necessary. Choose the measure that best describes the center. (Example 2)
7. The table shows the number of points scored by a football team. Calculate the mean and median with and without the outlier. Round to the nearest tenth, if necessary. Choose the measure that best describes the center. Explain. (Example 2)

Points Scored by a Football Team

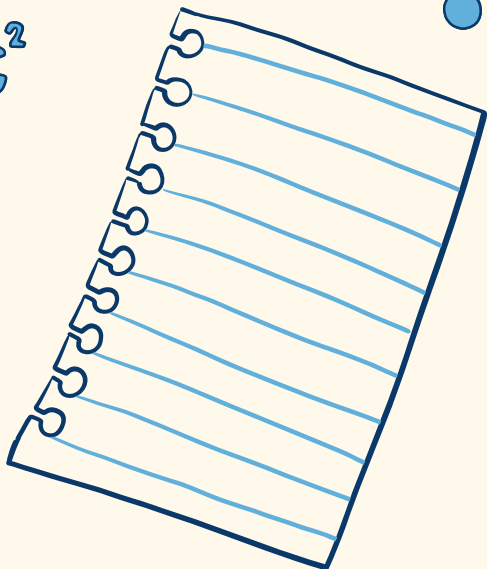
14	20	3	9
18	35	21	24
7	12	31	68



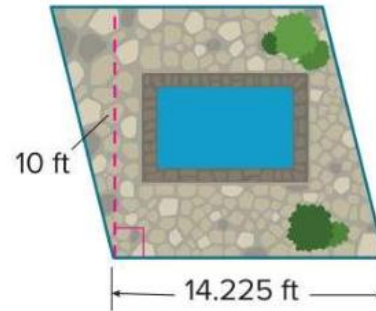


FRQ

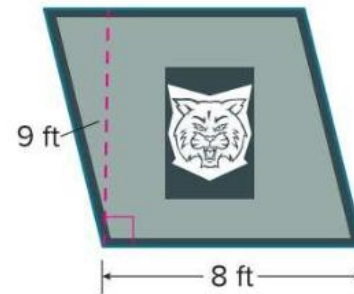
$$a^2 + b^2 = c^2$$



- *7. Liam is designing a patio and fountain for his backyard. The fountain will cover 50 square feet. The remaining space will be covered with tiles. If one tile covers 2.25 square feet, how many tiles will Liam need?

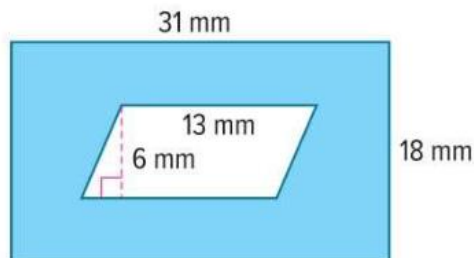


- *8. Tara and Veronica are making a parallelogram-shaped banner for a football game. They will paint the entire banner except for a rectangular section where a photo of the school's mascot will be placed. The photo of the mascot has an area of 6 square feet. If a 16-ounce bottle of primer covers 24 square feet, how many bottles of paint will they need?



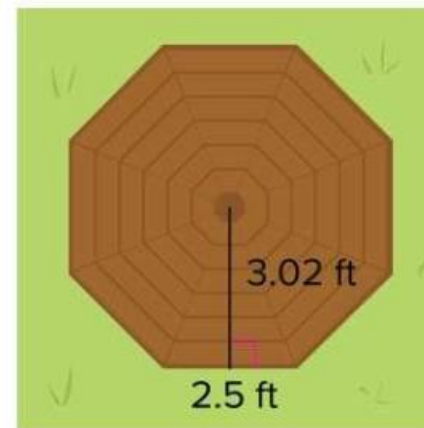
Higher-Order Thinking Problems

9.  **Identify Structure** Find the area of the shaded region.



Apply

4. Julian is going to build a picnic table. The top of the picnic table is shaped like an octagon with sides measuring 2.5 feet. If the wood costs \$3.95 per square foot, what is the least he will spend on the top of the picnic table?

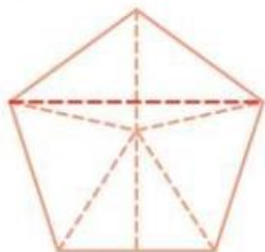


- *5. Williana's mother wants to buy a glass tabletop for their dining room table. The tabletop is shaped like a hexagon with sides measuring 27.75 inches. If the glass costs \$0.06 per square inch, how much will she spend on the glass table top?



Higher-Order Thinking Problems

6. Draw a regular pentagon and use dashed lines to show the ways it can be decomposed. Describe the shapes in the decomposed figure.



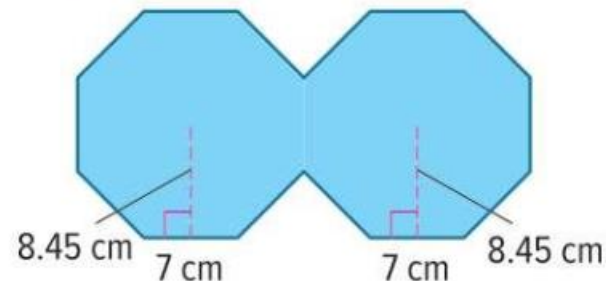
Sample answer: 5 triangles; 1 triangle and 1 trapezoid

8. **MP Reason Abstractly** The area of a regular hexagon is about 65 square units. You decompose the figure into 6 triangles. The height of one triangle is about 4.3 units. What is the approximate length of the base of the triangle?

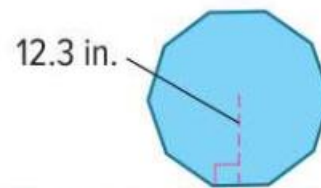
5 units

7. **MP Identify Structure** What is the area of the figure below?

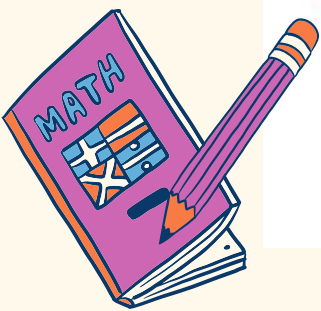
473.2 cm²



9. **MP Reason Inductively** The figure shown is a regular decagon. If the perimeter is 80 inches, what is the area of the decagon? Write an argument that can be used to defend your solution.



492 in²; the base length of each triangle is $80 \div 10$ or 8 in. So, $10 \left(\frac{1}{2} \times 8 \times 12.3 \right) = 492$.



Apply

- *7. The Lagusch family needs to rent a dumpster. The dumpsters they can choose from are shaped like rectangular prisms and have the dimensions shown. Which size dumpster is the best value to rent based on the cost per cubic foot?

Size	Length (ft)	Width (ft)	Height (ft)	Cost (\$)
Small	16	8	2	204.80
Medium	20	8	3.5	420.00
Large	22	8	5	677.60

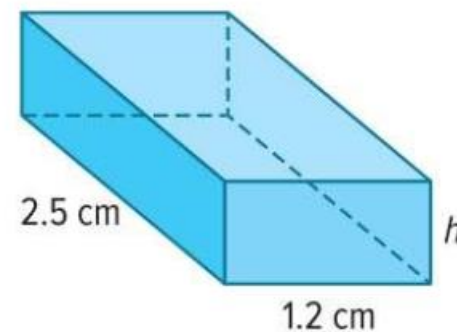
Higher-Order Thinking Problems

8. **Create** Draw and label a rectangular prism that has a volume less than 100 cubic meters.

9. **MP Find the Error** A classmate found the height of the prism shown using the following method. Find the error and correct it.

$$h = 1.5(1.2)(2.5)$$

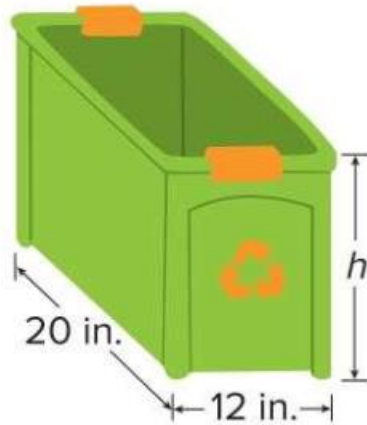
$$= 4.5 \text{ cm}$$



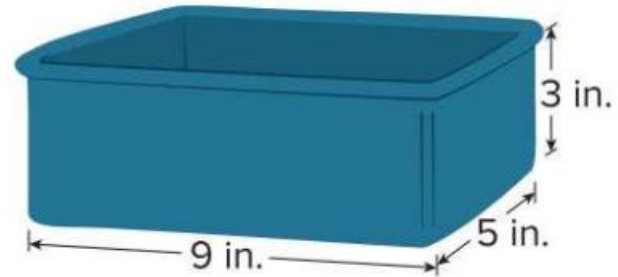
$$V = 1.5 \text{ cm}^3$$



10. **MP Reason Abstractly** A town provides a rectangular recycling bin for each household. The volume of each bin is 3,840 cubic inches. Is the height of the recycling bin greater than one foot? Write an argument that can be used to defend your solution.



11. **MP Reason Abstractly** The loaf pan shown is shaped like a rectangular prism. It will be filled with batter to $\frac{2}{3}$ full to make a loaf of bread without overflowing while baking. How much batter would it take to fill the pan $\frac{2}{3}$ of the way? Write an argument that can be used to defend your solution.



Example 2 Construct Histograms

A park ranger at a state park was asked the question *How many daily visitors attended the park each day for 20 days?* The table shows the results.

Construct a histogram to represent the data.

Step 1 Make a frequency table.

Use a scale to include all of the values, 100 through 399, with equally-spaced intervals.

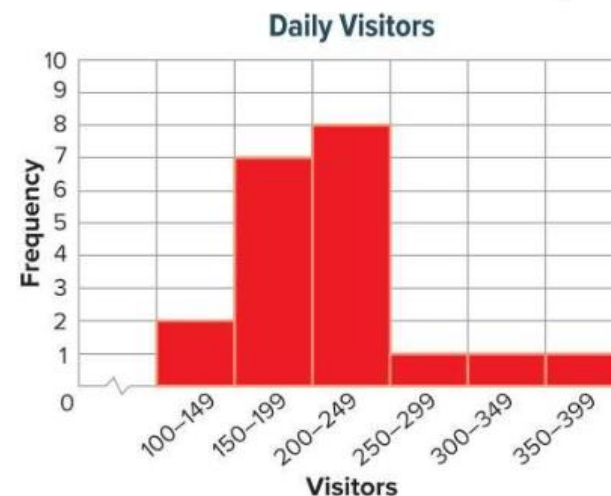
Complete the frequency table to organize the data.

Daily Visitors				
108	209	171	152	236
165	244	263	212	161
327	185	192	226	137
193	235	207	382	241

Daily Visitors	
Visitors	Frequency
100–149	2
150–199	7
200–249	8
250–299	1
300–349	1
350–399	1

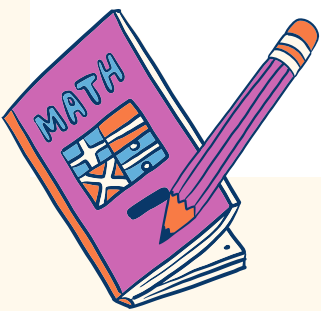
Step 2 Draw and label the axes.

When you construct the histogram, first draw the axes. Label the horizontal axis using the intervals from the frequency table, 100–149 through 350–399. Label the vertical axis with the frequencies, 1–10.



Step 3 Graph the intervals.

For each interval, draw a bar with a height that is indicated by the frequency table. Complete the histogram by drawing and shading the correct bar heights.

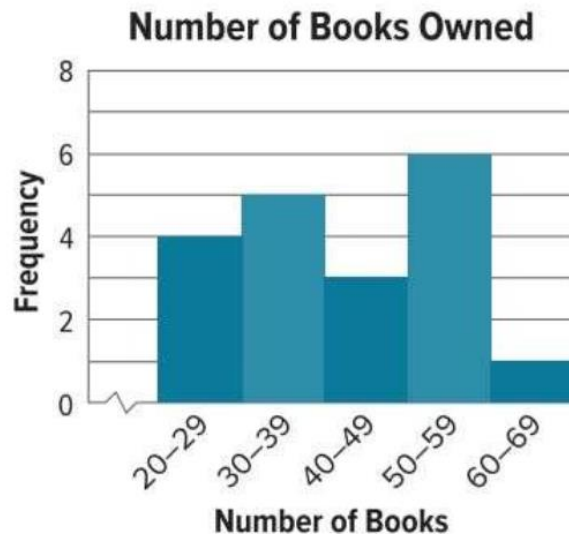


Apply

5. Lou wanted to determine how much his friends pay for video games. He surveyed them using the question *How much did you pay for the last video game you bought?* The responses were \$29, \$45, \$50, \$55, \$34, \$28, \$35, \$35, \$45, \$30, \$34, and \$55. How many more games cost between \$30 and \$39 than between \$40 and \$49?

Higher-Order Thinking Problems

6. Provide a data set that can be represented by the histogram shown.



- 5. Open Response** The cost of tents on sale at a sporting goods store are \$66, \$72, \$78, \$69, \$64, \$70, \$67, \$72, and \$66. Use the range and interquartile range to describe how the data vary.

Apply

- *6.** The table shows the number of points scored by the seventh and eighth grade girls basketball teams in each of their games this season. Construct a box plot to represent the data for each team. Then use the box plots to compare the data.

Points Scored per Game							
Seventh Grade Team				Eighth Grade Team			
39	36	40	27	34	36	47	40
35	29	36	29	39	38	45	43
31	38	30	34	42	41	45	42



Thank you!

T. Athar Hashem