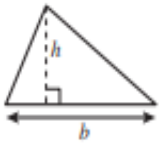
NPS Learning in Place

Pre-algebra 6/7 and Math 8

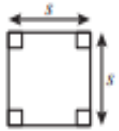
Week 1 April 6-10	Week 2 April 20-24
• Change in attributes • 3D Views • Spiral Review 1 • Spiral Review 2	• Day 1 Composite Figures • Composite Figures Day 2 – Day 5

Grade 8 Mathematics Formula Sheet
2016 *Mathematics Standards of Learning*

Geometric Formulas

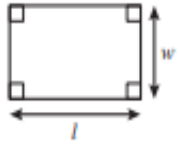


$A = \frac{1}{2}bh$



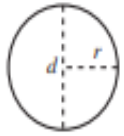
$p = 4s$

$A = s^2$



$p = 2l + 2w$

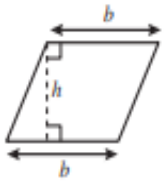
$A = lw$



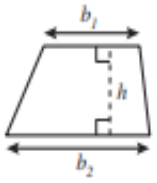
$C = 2\pi r$

$C = \pi d$

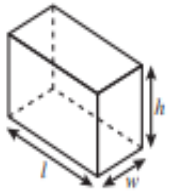
$A = \pi r^2$



$A = bh$

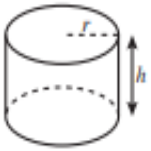


$A = \frac{1}{2}h(b_1 + b_2)$



$V = lwh$

$S.A. = 2lw + 2lh + 2wh$

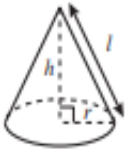


$V = \pi r^2 h$

$S.A. = 2\pi r^2 + 2\pi rh$

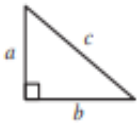
$V = \frac{1}{3}Bh$

$S.A. = \frac{1}{2}lp + B$



$V = \frac{1}{3}\pi r^2 h$

$S.A. = \pi r^2 + \pi rl$



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

Pi

$\pi \approx 3.14$

$\pi \approx \frac{22}{7}$

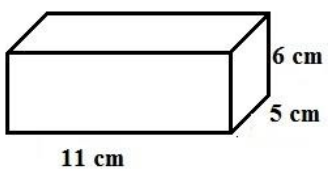
Abbreviations

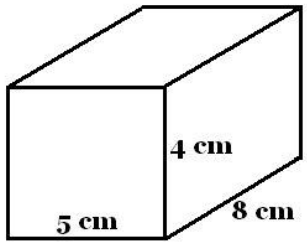
milligram	mg
gram	g
kilogram	kg
milliliter	mL
liter	L
kiloliter	kL
millimeter	mm
centimeter	cm
meter	m
kilometer	km
square centimeter	cm^2
cubic centimeter	cm^3

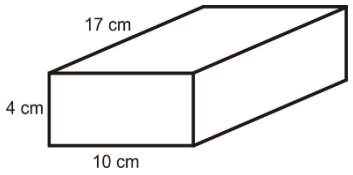
ounce	oz
pound	lb
quart	qt
gallon	gal.
inch	in.
foot	ft
yard	yd
mile	mi.
square inch	sq in.
square foot	sq ft
cubic inch	cu in.
cubic foot	cu ft

Area	A
Area of Base	B
Circumference	C
Perimeter	P
Surface Area	$S.A.$
Volume	V

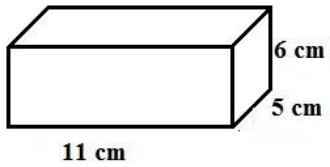
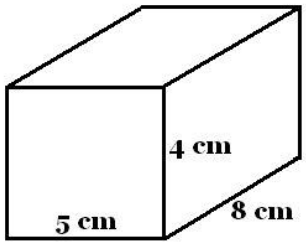
Changing Attributes

1. Original	Find the Volume	Scale factor:	New Volume:	Scale factor:	New Volume:
	V = lwh L = 11, w = 5, h = 6 V = (11)(5)(6) V = 330 cm^3	Length → 2 (Multiply the length only by 2)	V = lwh L = 22, w = 5, h = 6 V = (22)(5)(6) V = 660 cm^3	Length → 3 (from original) (Multiply the length only by 3)	V = lwh L = 33, w = 5, h = 6 V = (33)(5)(6) V = 990 cm^3
Describe change:					

2. Origininal	Find the Volume	Scale factor:	New Volume:	Scale factor:	New Volume:
		Width → 2 (Multiply the width only by 2)		Height → 2 (from original) (Multiply the height only by 2)	
Describe change:					

3. Original	Find the Volume	Scale factor:	New Volume:	Scale factor:	New Volume:
		Length → $\frac{1}{2}$ (Multiply the length only by $\frac{1}{2}$)		Height → 4 (from previous change) (Multiply the height only by 4)	
Describe change:					

Changing Attributes

	**Find the Surface Area:** SA = 2lw + 2lh + 2wh	**Scale factor:** Width → 4 (Multiply the width only by 4)	**New Surface Area:**	**Scale factor:** Length → 3 (from original) (Multiply the length only by 3)	**New Surface Area:**
Describe change:					
	**Find the Surface Area:**	**Scale factor:** Height → $\frac{1}{4}$ (Multiply the height only by $\frac{1}{4}$)	**New Surface Area:**	**Scale factor:** Height → 3 (from previous change) (Multiply the height only by 3)	**New Surface Area:**
Describe change:					

Change the attribute and record the new volume and surface area.

#	W	L	H	Volume	S. Area	Change the Attribute	New Vol	New SA
1	1	2	3			Double h (multiply h by 2)		
2	2	2	2			Square w (multiply w by itself)		
3	8	6	10			Divide h by 2		
4	5	4	8			Times L by 3		
5	3	3	6			Divide h in half		

Answer the questions below on a separate sheet of paper

a) Look at #1 and compare the new volume to the old volume. What changes do you see?

b) Look at #2 and compare the new volume to the old volume. What changes do you see?

c) Look at #3 and compare the new volume to the old volume. What changes do you see?

d) Look at #4 and compare the new volume to the old volume. What changes do you see?

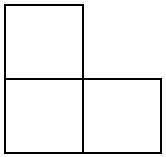
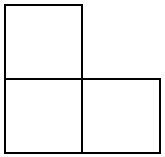
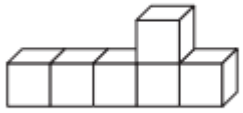
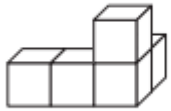
e) Look at #5 and compare the new volume to the old volume. What changes do you see?

f) What can we conclude about how the volume will change when an attribute change

g) Compare the surface areas. Is there a patter

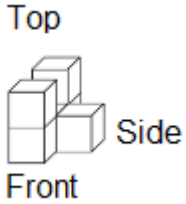
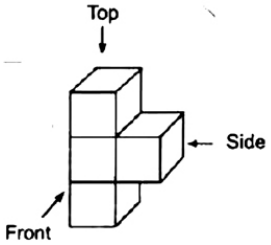
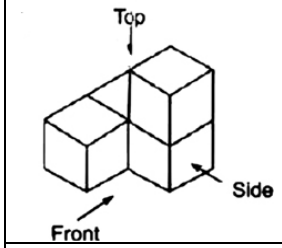
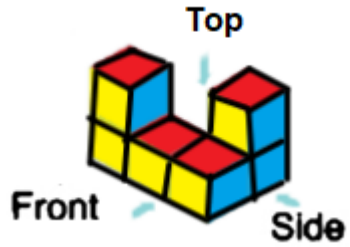
3D-Views

Draw the front, top and side view of the figures below

Figure 1 Top  Side Front	**Front View** 	**Top View** 	**Side View** 
Figure 2 Top  Side Front	**Front View**	**Top View**	**Side View**
Figure 3 Top  Side Front	**Front View**	**Top View**	**Side View**
Figure 4 Top  Side Front	**Front View**	**Top View**	**Side View**

3D-Views

Draw the front, top and side view of the figures below

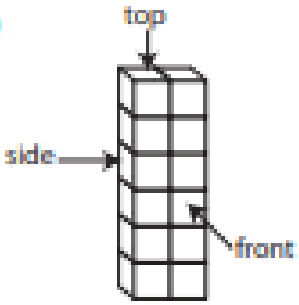
Figure 5 	**Front View**	**Top View**	**Side View**
Figure 6 	**Front View**	**Top View**	**Side View**
Figure 7 	**Front View**	**Top View**	**Side View**
Figure 8 	**Front View**	**Top View**	**Side View**

1

Front, Top, & Side Views

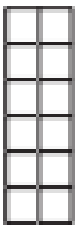
Choose the image corresponding to the specified view.

1)



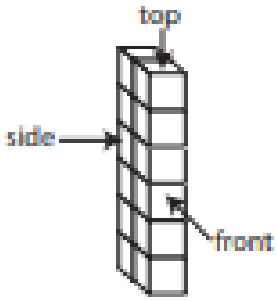
Side View

a) 

b) 

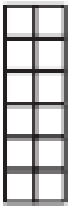
c) 

2)



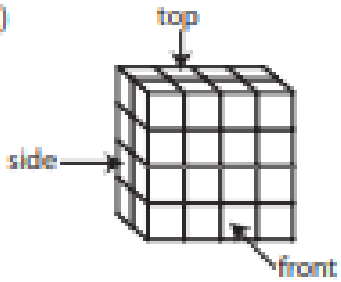
Side View

a) 

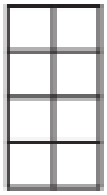
b) 

c) 

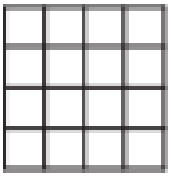
3)



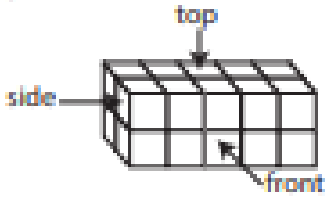
Front View

a) 

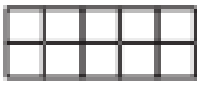
b) 

c) 

4)



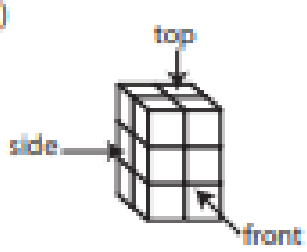
Top View

a) 

b) 

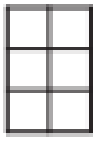
c) 

5)



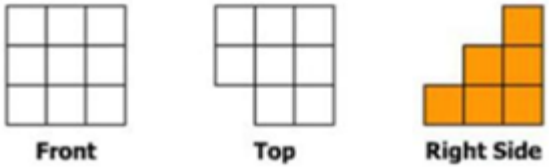
Side View

a) 

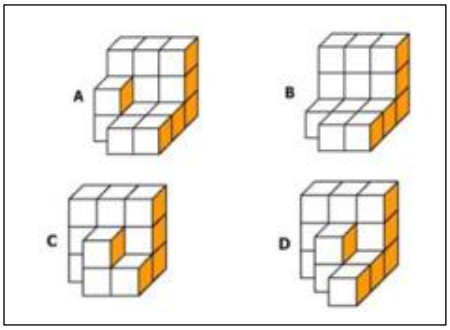
b) 

c) 

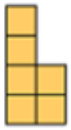
Three different views of a 3D figure are shown



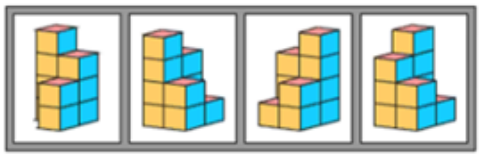
Which of the following figures could this view represent?



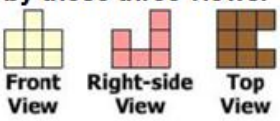
The front view of a three-dimensional figure using identical cubes is shown.

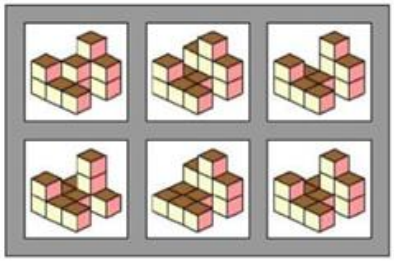


Identify each three-dimensional figure that has this front view



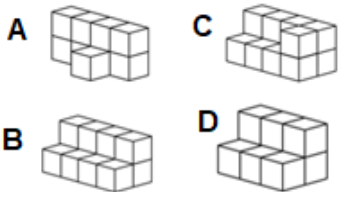
Identify each 3-dimensional figure that could be represented by these three views.



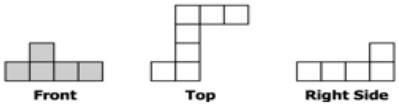


Three different views of a 3D figure are shown

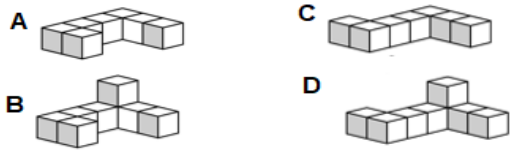
Which of the following figures could this view represent?



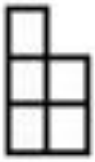
Three different views of a 3D figure are shown

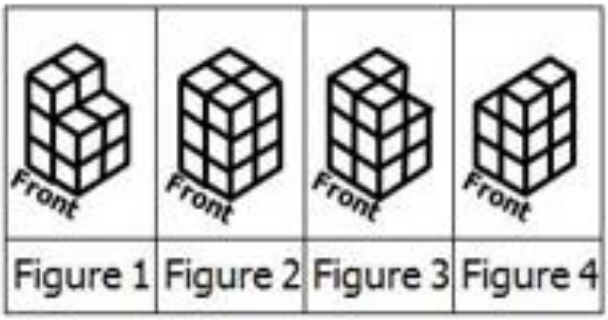


Which of the following figures could this view represent?



Which figure has the following front view?





3

Spiral Review 1: Show your work/Explain your answers!!

1. Which of the following is equivalent to 16?

A. $\sqrt{324}$ B. $\sqrt{289}$ C. $\sqrt{256}$ D. $\sqrt{196}$

2. Which of the following numbers is NOT a perfect square?

A. 121 B. 144 C. 200 D. 225

3. In the diagram of the cabinet door, the measure of $\angle 2 = 84°$. What is the measure of $\angle 4$?

A. 6°

B. 76°

C. 84°

D. 96°

4. Which of the following could be the measurement of two supplementary angles?

$A. 7° \text{ and } 83°$ $B. 83° \text{ and } 83°$

$C. 97° \text{ and } 83°$ $D. 117° \text{ and } 83°$

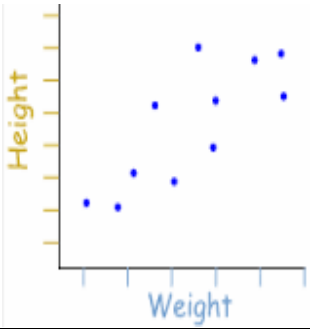
5. Which of these best describes the relationship of the data shown on this scatterplot?

A. Constant relationship

B. Negative relationship

C. Positive relationship

D. No relationship



6. Which of these best describes the relationship of the data shown on this scatterplot?

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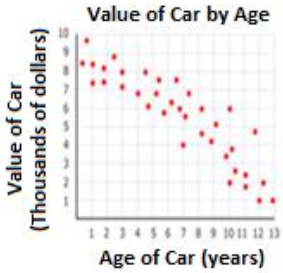
D. No relationship



7. Given the relation {(5, 7), (6, 8), (0, 2), (9, 11)}, what is the domain of the relation?

A. {5, 7, 6, 8}

B. {5, 6, 0, 9}

C. {0, 2, 9, 11}

D. {0, 3, 9, 11}

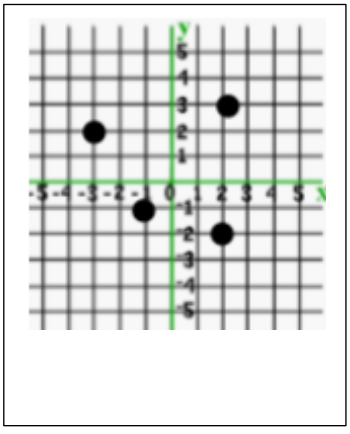
8. What is the range of the relation represented in the coordinate plane below?

A.{-3, -1, 1, 2}

B. {(-3,2)(-1,-1)(1, -2)(2,3)}

C. {-2, -1, 2, 3}

D. {(2, -3)(-1,-1)(-2,1)(3,2)}



9. Which of the following is equivalent to 19?

A. $\sqrt{38}$ B. $\sqrt{76}$ C. $\sqrt{324}$ D. $\sqrt{361}$

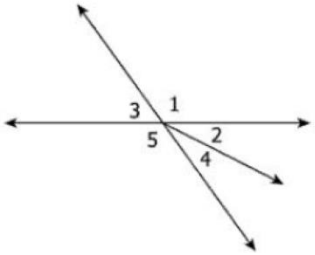
10. Which of the following is equivalent to the square root of 144?

A. 12 B. 72 C. 144 D. 288

11. ∠L measures 38°. What is the measure of the complement to ∠L?

A. 38°
B. 52°
C. 122°
D. 142°

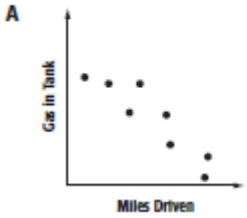
12. Look at the angles.

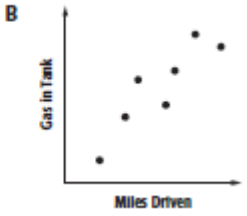


Identify each angle that is adjacent to Angle 2.

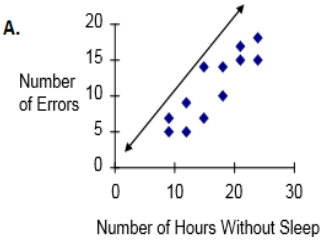
Angle 1 Angle 3 Angle 4 Angle 5

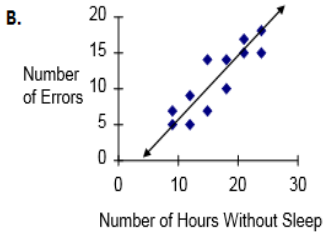
13. Which scatterplot shows data with a positive relationship?





14. A study was conducted to determine the effects of sleep deprivation on a student's ability to solve simple math problems. Which graph shows a line of best fit?





15. The formula shows that the total cost of buying pizzas (c) at Domino's depends on the number of pizzas (p) ordered plus a $2 delivery charge.

$$C = 9p + 2$$

What is the independent variable in the formula?

A. p
B. c
C. 2
D. 9

16. Teresa has a $50 coupon for an auto service. The price is usually $65 an hour. The equation shows the relationship between the *T* dollars she pays for the service and the number of hours of service (*h*).

$$65h - 50 = T$$

What does the dependent variable represent?

A. The number of hours of service

B. The cost without the coupon

C. The $65 hourly cost

D. The total cost

Spiral Review 2: Show your work/Explain your answers!!

1. Which pair of numbers are both between 3 and 4?

A. $\sqrt{11}\ and\ \sqrt{15}$
B $\sqrt{9}\ and\ \sqrt{16}$
C. $\sqrt{10}\ and\ \sqrt{17}$
D.$\sqrt{15}\ and\ \sqrt{20}$

2. Which statement best describes $\sqrt{98}$

A. $Exactly\ 10$

B.$Exatly\ 49$

C. $Between\ 9\ and\ 10$

D. $Between\ 48\ and\ 50$

3. Identify each integer

$\sqrt{64}$	0.2	$-\frac{1}{4}$	-15	$\frac{90}{18}$

4. Which number in this list is NOT irrational?

$\pi,\ \sqrt{361}, \sqrt{2}, \sqrt{120}$

A. π B. $\sqrt{361}$ C. $\sqrt{2}$ D. $\sqrt{120}$

5. . Decide whether the events are independent or dependent

"A student spins a spinner and rolls a number cube"

Independent Events
Dependent Events

3. Decide whether the events are independent or dependent

"A student picks a raffle ticket from a box and then picks the second raffle ticket without replacing the first raffle ticket"

Independent Events
Dependent Events

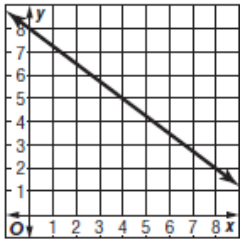
7. Which linear equation represents the graph below?

A. $y = -\frac{3}{4}x - 8$

B. $y = 8 - \frac{3}{4}x$

C. $y = -\frac{2}{3}x + 8$

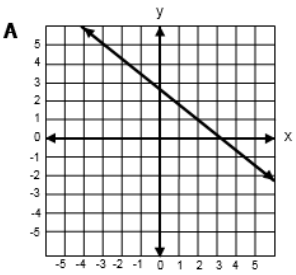
D. $y = 8 - \frac{4}{3}x$



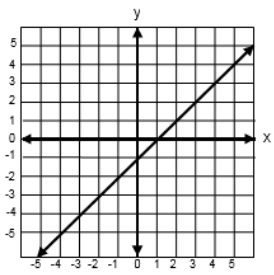
8. Which graph below represents this equation?

$x - 1 = y$

A



B



9. Where would $\sqrt{10}$ be located on the number line below?

A B. B C. C D. D

10. The square root of 55 is between which two consecutive whole numbers?

A 4 and 5
B 5 and 6
C 6 and 7
D 7 and 8

11. Which number is an irrational number

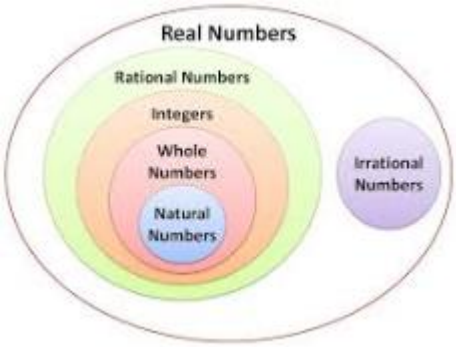
A. 3.14

B. $\sqrt{8}$

C. $-\sqrt{4}$

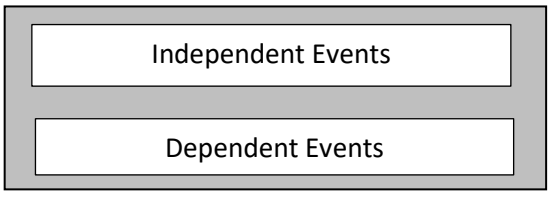
D. -5

12. Place $\sqrt{256}$ in all of the subsets that it belongs to



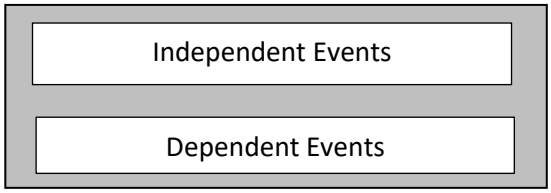
13. . Decide whether the events are independent or dependent

"Flipping a tail ona coin and spinning a 5 on a spinner with sections of equal size numbered 1-5"



14. . Decide whether the events are independent or dependent

"Selecting a dime first and then without replacing the dime, choosing a penny from a box containing a penny, a nickel and a dime "



15. Which table of data best represents the points on the line?

A

x	y
-3	-3
-2	0
-1	3

B

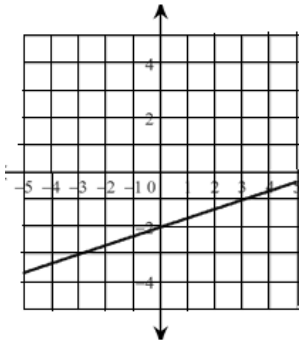
x	y
-3	-3
0	-2
3	-1

C

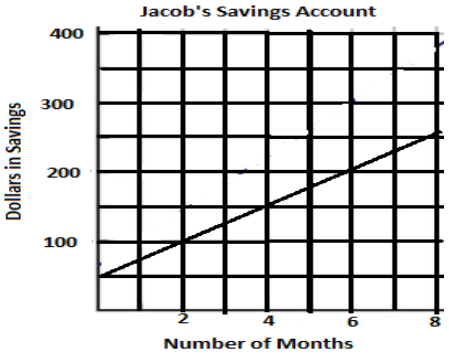
x	y
-3	-1
0	-2
3	-3

D

x	y
3	-3
0	-2
-3	-1



16. . How much does Jacob save per month?



A. 25 B. 50 C. 75 D. 100

Area and Perimeter of Composite Figures Day 1

Notes

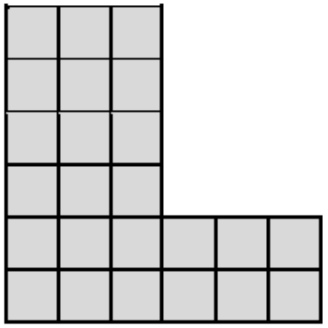
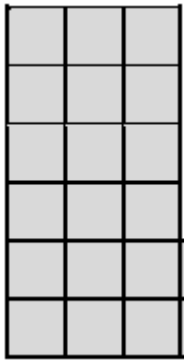
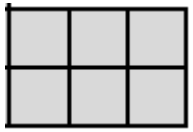
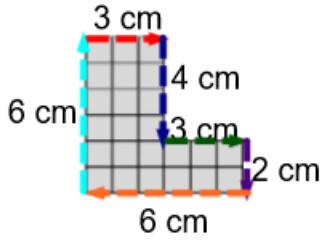
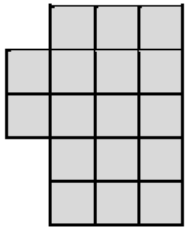
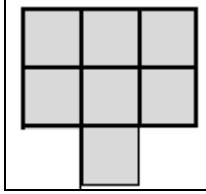
When finding the area of a composite figure……

Step1: Divide the figure into familiar shapes- rectangles, squares, triangles, circles, semicircles, trapezoids

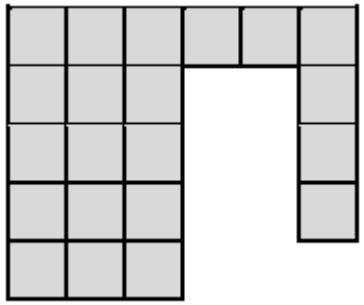
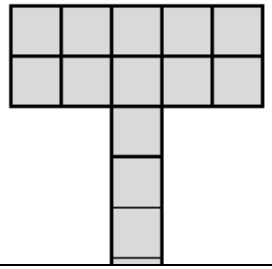
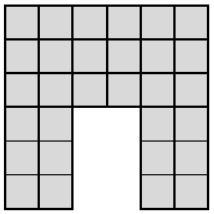
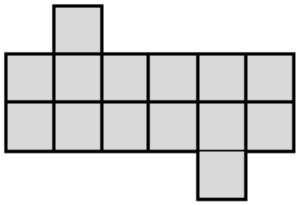
Step 2: Find the area of the individual figures- Use the Formula Sheet

Step 3: Add all of the areas together

 = 1 cm²

Shape	Figure 1:	Figure 2:	Total Area	Perimeter: Distance around the shape
1. 	 A = lw L = 3 W = 6 A= (3)(6) A = 18 cm²	 A = lw L = 3 W = 2 A= (3)(2) A = 6 cm²	**A = 18 + 6** **A = 24 cm²**	 P= 3 + 4 + 3 + 2 + 6 + 6 P = 24 cm
2. 				
3. 				

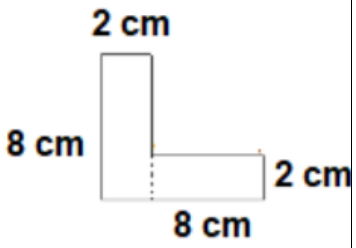
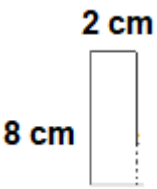
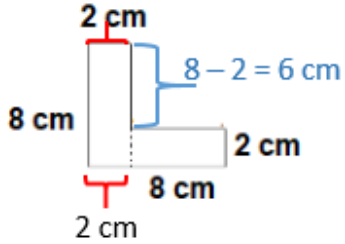
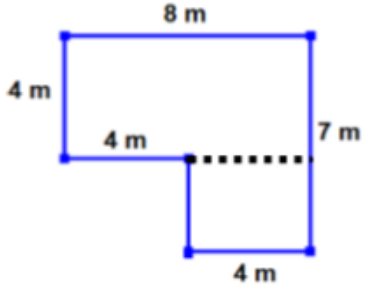
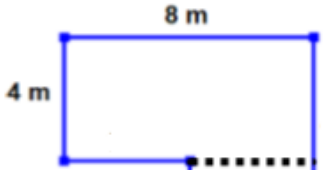
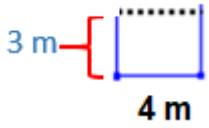
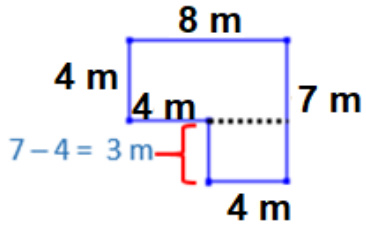
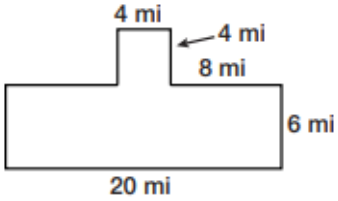
Find the Area and Perimeter of the figures below (you must show your work) Day 1

Figure	Show work for total Area and Perimeter
4. 	
5. 	
6. 	
7. 	

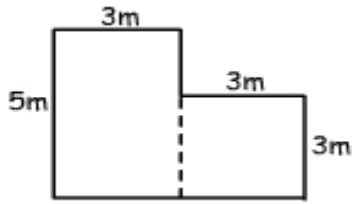
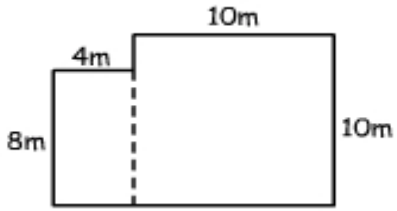
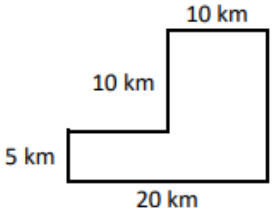
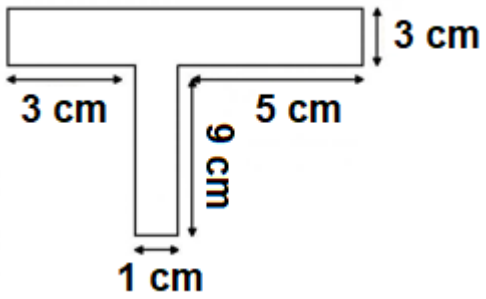
Area and Perimeter of Composite Figures Day 2

Notes

When finding the area and perimeter of a composite figure……
Step1: Divide the figure into familiar shapes- rectangles, squares, triangles, circles, semicircles, trapezoids
Step 2: Fill in the missing numbers
Step 2: Find the area of the individual figures- Use the Formula Sheet
Step 3: Add all of the areas together

Shape	Figure 1:	Figure 2:	Total Area	Perimeter: find the missing sides
1. 	 A = lw L = 2 W = 8 A= (2)(8) A = 16 cm^2	 A = lw L = 2 W = 8 A= (2)(8) A = 16 cm^2	**A = 16 + 16** **A = 32 cm^2**	 **P = 2 + 6 + 2 + 8 + 2 + 8** **P = 28 cm**
2. 				
				

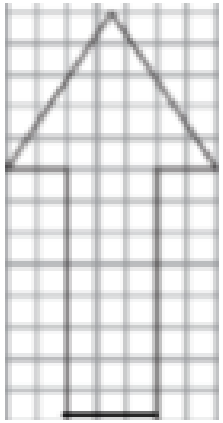
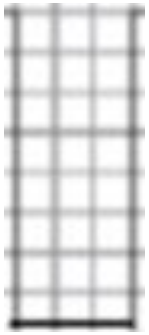
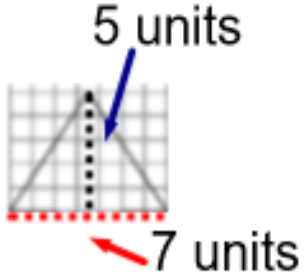
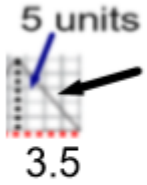
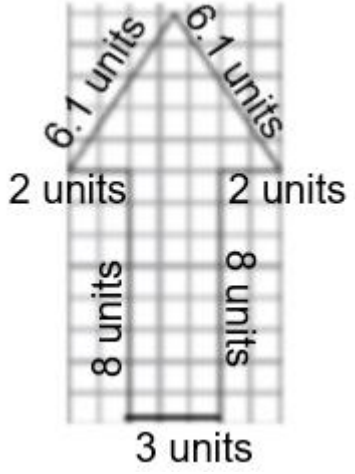
Find the Area and Perimeter of the figures below (you must show your work) Day 2

Figure	Show work for total Area and Perimeter
4. 	
5. 	
6. 	
7. 	

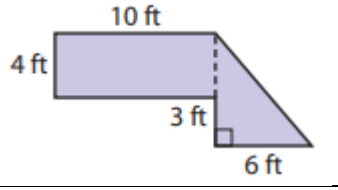
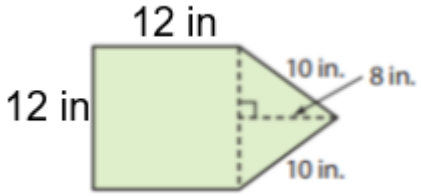
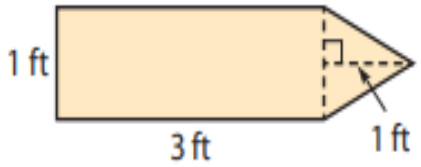
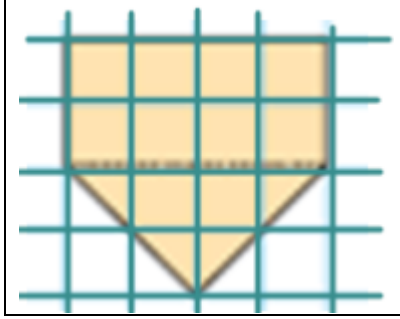
Area and Perimeter of Composite Figures Day 3

Notes

When finding the area and perimeter of a composite figure……
Step1: Divide the figure into familiar shapes- rectangles, squares, triangles, circles, semicircles, trapezoids
Step 2: Fill in the missing numbers
Step 2: Find the area of the individual figures- Use the Formula Sheet
Step 3: Add all of the areas together

Shape	Figure 1:	Figure 2:	Total Area	Perimeter: find the missing sides
1. 	 A = lw L = 3 W = 8 A= (3)(8) A = 24 unit^2	 **A = $\frac{1}{2}bh$ b = 7, h = 5** **A = $\frac{1}{2}(7)(5)$** **A = 17.5 units^2**	**A = 24 + 17.5** **A = 41.5 units^2**	 $a^2 + b^2 = c^2$ $(3.5)^2 + (5)^2 = c^2$ $12.25 + 25 = c^2$ $\sqrt{37.25} = c$ $6.1 = c$  **P = 6.1 + 6.1 + 2 + 8 + 3 + 8 + 2** **P = 35. 2 units**

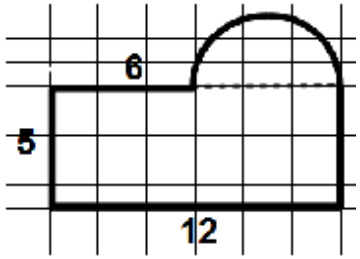
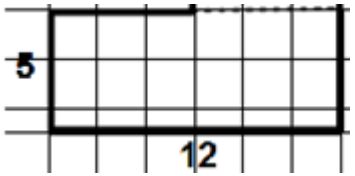
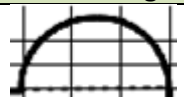
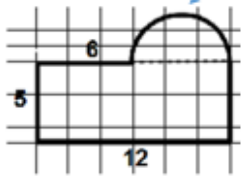
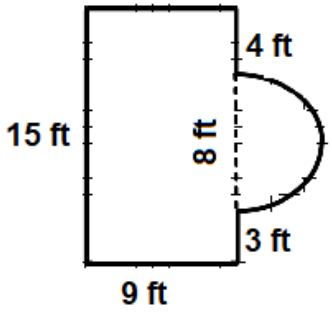
Find the Area and Perimeter of the figures below (you must show your work) Day 3

Figure	Show work for total Area and Perimeter
2. 	
3. 	
4. 	
5. 	

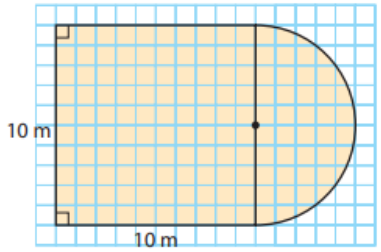
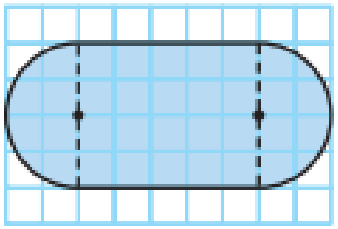
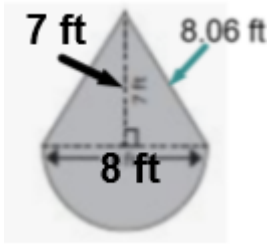
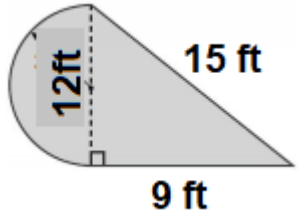
Area and Perimeter of Composite Figures Day 4

Notes

When finding the area and perimeter of a composite figure……
Step1: Divide the figure into familiar shapes- rectangles, squares, triangles, circles, semicircles, trapezoids
Step 2: Fill in the missing numbers
Step 2: Find the area of the individual figures- Use the Formula Sheet
Step 3: Add all of the areas together

Shape	Figure 1:	Figure 2:	Total Area	Perimeter: find the missing sides
1. 	 **A = lw l = 12 w = 5** **A = (12)(5)** **A = 60 units²**	 Half of a circle d = 3 r = (3) ÷ 2 r = 1.5 $A = \frac{\pi r^2}{2}$ $A = \frac{(3.14)(1.5)(1.5)}{2}$ A = 3.53 units²	**A = 60 + 3.53** **A = 63.53 units²**	Half of the circumference $C = \frac{\pi d}{2}$ $C = \frac{(3.14)(3)}{2} = 4.71$  **P = 5 + 12 + 5 + 6 + 4.71** **P = 32.71 units**
2. 				

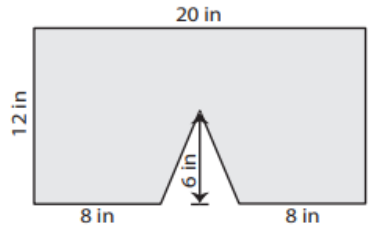
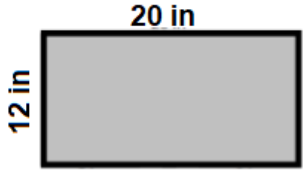
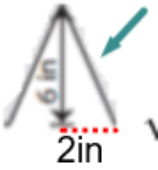
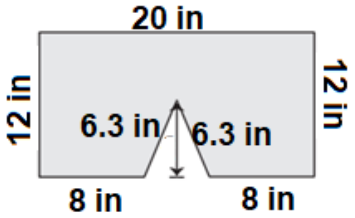
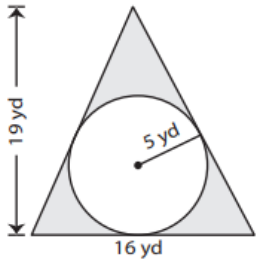
Find the Area and Perimeter of the figures below (you must show your work) Day 4

Figure	Show work for total Area and Perimeter (use 3.14 for π)
4. 	
5. 	
6. 	
7. 	

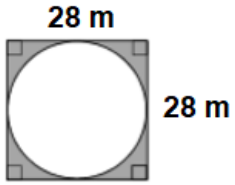
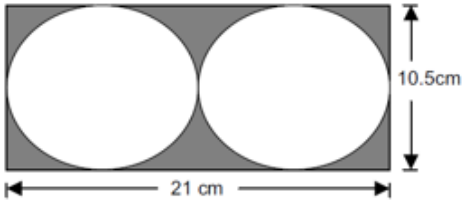
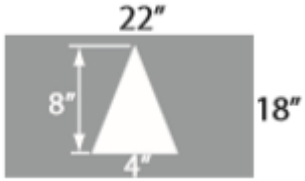
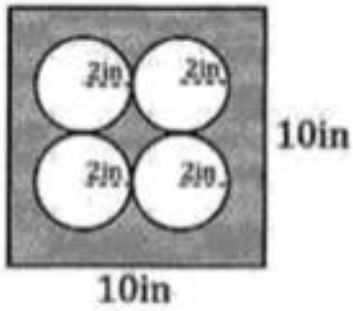
Area and Perimeter of the Shaded Region Day 5

Notes

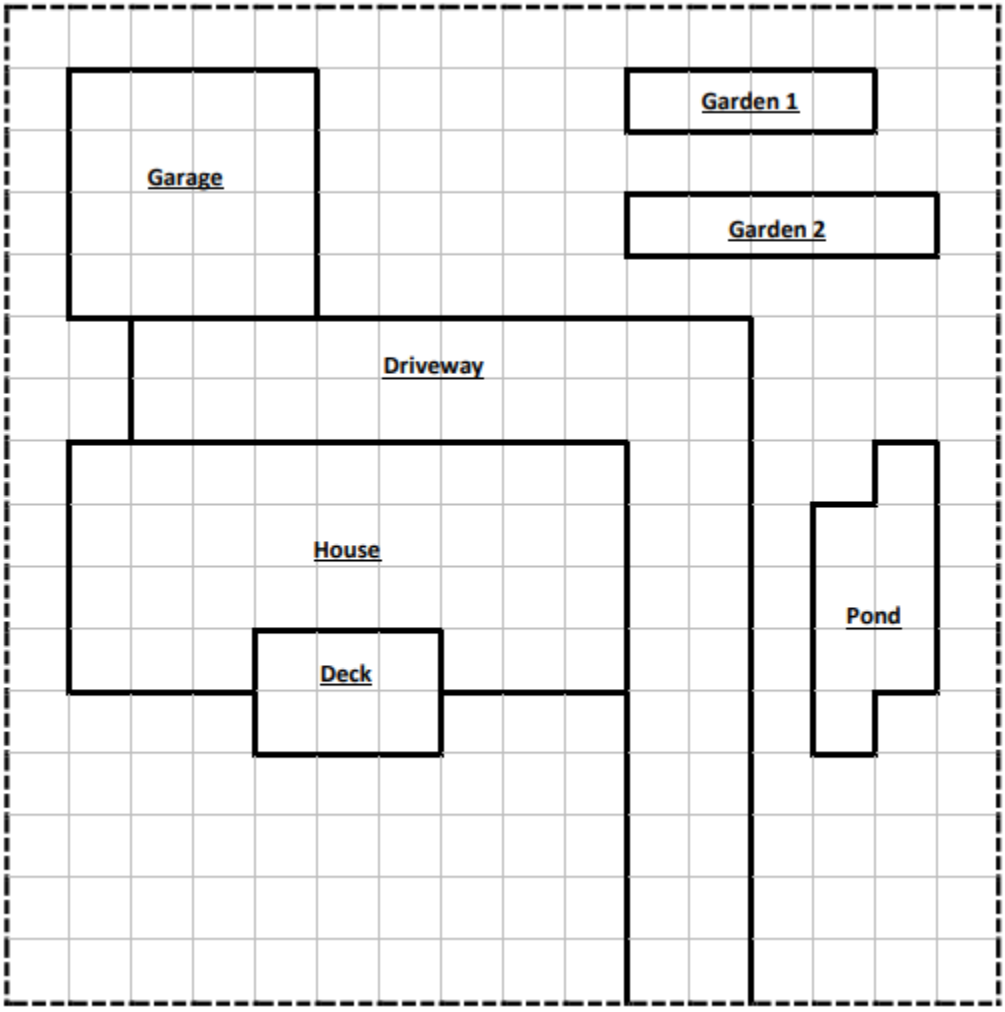
When finding the area and perimeter of a composite figure……
Step1: Divide the figure into familiar shapes- rectangles, squares, triangles, circles, semicircles, trapezoids
Step 2: Fill in the missing numbers
Step 2: Find the area of the entire region and the unshaded region
Step 3: Subtract the area of unshaded regions from the area of the entire region

Shape	Figure 1:	Figure 2:	Total Area	Perimeter: find the missing sides
1. 	 **A = lw l = 20 w = 12** **A = (20)(12)** **A = 240 in²**	 20 - 8 - 8 = 4in **A = $\frac{1}{2}bh$; b = 4, h = 6** **A = $\frac{1}{2}(4)(6)$** **A = 12 in²**	**A = 240 - 12** **A = 228 in²**	 $a^2 + b^2 = c^2$ $2^2 + 6^2 = c^2$ $4 + 36 = c^2$ $\sqrt{40} = c$ $6.3 = c$  P = 12 + 20 + 12 + 8 + 6.3 +6.3 + 8 P = 72.6 in
2. 				

Find the Area and Perimeter of the shaded region (you must show your work) Day 5

Figure	Show work for total Area and Perimeter of the shaded region (use 3.14 for π)
4. 	
5. 	
6. 	
7. 	

DAY 5-Calculating Area: Yeny received these plans of a property she just bought. Help her answer some questions. Each square is 1 square meter.



1. What is the area of the house?

2. What is the area of the pond?

3. What is the total area of the gardens?

4. What is the area of the driveway?

5. Yeny wants to make her garage larger. She needs one that is $22m^2$. How much larger does she need to make the new garage?

6. Draw on the plans to show where her new garage might best fit.

7. Yeny wants room to plant vegetables. Design a garden space for the front of Yeny's house. It must have a total area of $11m^2$. Yeny is not sure if she would like one large garden, or a couple of smaller ones.