

6-8-17

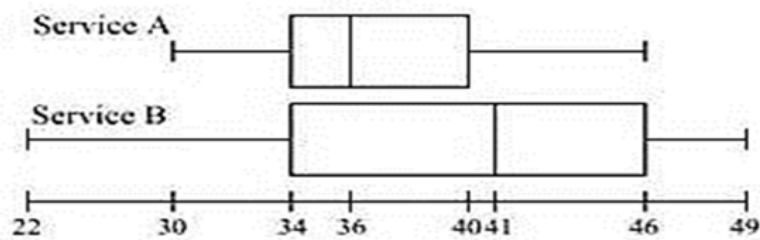
Aim: SWBAT review for the final exam.

Do Now: Review Packet

HW: Final Exam Tuesday, June 13th

Textbook due on or before the final exam

The following box whiskers diagrams represents how many minutes it take a cleaning service to clean the same house. Answer questions 25 - 28 below based on the data from the diagram.



25) On average, what service appears to clean the house faster? A explain why?

It's median time is 5 minutes faster, it also has a lower range and IQR (inter-quartile range)

26) Which service would you say is more consistent? A explain why? It's median time is 5 minutes faster, it also has a lower range and IQR (inter-quartile range) so it's data are more clustered together.

27) What percent of the time did service B finish under 41 mins? 50%

28) What percent of the time did service A clean at least 34 mins? 75%

### Unit 5: Geometry

You should know the area formulas for 2-dimensional figures. (square, rectangle, rhombus, parallelogram, triangle and trapezoid)

**Circle:** Area:  $A = \pi r^2$  Circumference:  $C = \pi d$  or  $C = 2\pi r$  (d is diameter & r is radius)

- **Exact** means to leave your answer in terms of  $\pi$ .
- **Approximate** means use the  $\pi$  button on your calculator.

**Rectangular Prism:**  $SA = 2wl + 2lh + 2wh$

**Cube:**  $V = s^3$

**Rectangular Prism:**  $V = lwh$

**Triangular prism:**  $V = \left(\frac{1}{2}bh\right)h$

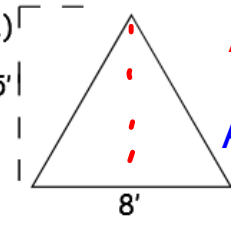
**Pyramid:**  $V = \frac{1}{3} Bh$ , where B is the area of the shape's base

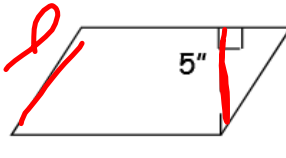
**\*\* Remember your units!**

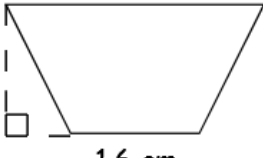
- Area and Surface area are units<sup>2</sup>
- Volume is units<sup>3</sup>

**\*\* Remember: ESTIMATE means to round the numbers FIRST, before you do any calculations!!!**

Find the area of each figure **USING A FORMULA.**

1)   $A = \frac{1}{2}bh$   
 $A = \frac{1}{2}(8)(5)$   
 $A = 20 \text{ ft}^2$

2)   $A = bh$   
 $A = (11.2)(5)$   
 $A = 56 \text{ in}^2$

3)   $A = \frac{1}{2}(b_1 + b_2)h$   
 $A = \frac{1}{2}(2.3 + 1.6)1.3$

\* Formulas for Area and Circumference of a circle are on Page 28

4) Find the EXACT CIRCUMFERENCE of a circle whose diameter is 10 m.

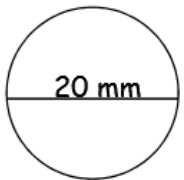
$C = \pi d$   
 $C = \pi \cdot 10$   
 $C = 10\pi$   
 $C = 10\pi \text{ m}$

$A = 2.535 \text{ cm}^2$

5) Find the EXACT AREA of a circle with a diameter of 12 in.

$d = 12, \text{ so } r = 6$   
 $A = \pi r^2$   
 $A = \pi \cdot (6)^2$   
 $A = 36\pi \text{ in}^2$

6) Find the area AND circumference of the following circle to the nearest hundredth.

  $C = \pi d$   
 $C = \pi \cdot 20$   
 $C = 20\pi$   
 $C = 62.8318...$   
 $C \approx 62.83 \text{ mm}$

$d = 20, \text{ so } r = 10$   
 $A = \pi r^2$   
 $A = \pi \cdot (10)^2$   
 $A = 100\pi$   
 $A = 314.1592...$   
 $A \approx 314.16 \text{ mm}^2$

7) A circle has a circumference of  $24\pi$ , find the diameter AND radius of the circle.

$C = 2\pi r$   
 $24\pi = 2 \cdot \pi \cdot r$   
 $\frac{24\pi}{2\pi} = \frac{2 \cdot \pi \cdot r}{2\pi}$   
 $12 = r$

The radius is 6m  
 The diameter is 12m

8) A circle has a circumference of  $18\pi$ , find the area of the circle.

First use circumference to find the radius:

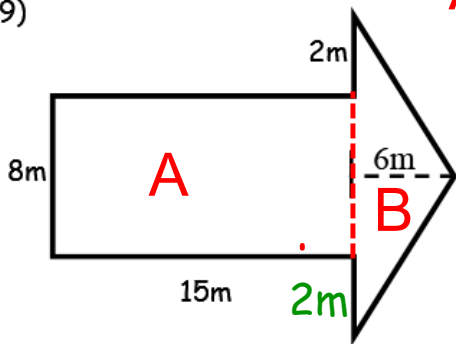
$C = 2\pi r$   
 $18\pi = 2 \cdot \pi \cdot r$   
 $\frac{18\pi}{2\pi} = \frac{2 \cdot \pi \cdot r}{2\pi}$   
 $9 = r$

Next the radius to find the area:

$A = \pi r^2$   
 $A = \pi \cdot (9)^2$   
 $A = 81\pi$   
 $A = 254.4690...$   
 $A \approx 254.5 \text{ mm}^2$

Find the area of the irregular shapes. Be sure to use you formulas!

9)



$$A \rightarrow A = lw \quad B \rightarrow A = \frac{1}{2}bh \quad \left(\frac{bh}{2}\right)$$

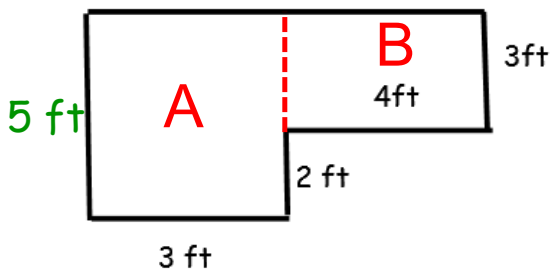
$$A = 15 \cdot 8 \quad A = \frac{1}{2} \cdot 12 \cdot 6$$

$$A = 120 \quad A = 36$$

Total Area = A + B  
 Total Area = 120 + 36

Total Area = 156 m<sup>2</sup>

10)



$$A \rightarrow A = lw \quad B \rightarrow A = lw$$

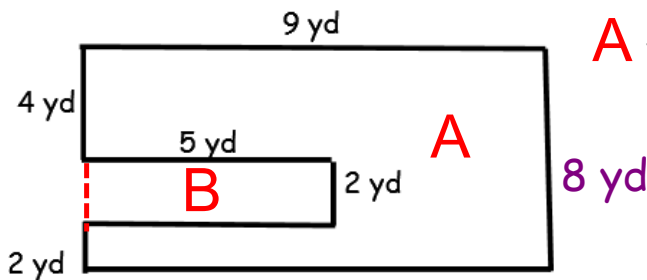
$$A = 5 \cdot 3 \quad A = 4 \cdot 3$$

$$A = 15 \quad A = 12$$

Total Area = A + B  
 Total Area = 15 + 12

Total Area = 27 ft<sup>2</sup>

11)



$$A \rightarrow A = lw \quad B \rightarrow A = lw$$

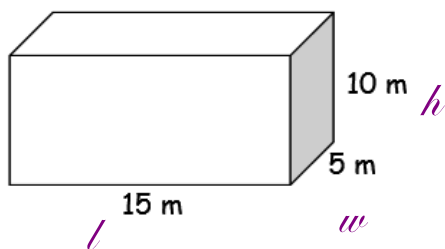
$$A = 9 \cdot 8 \quad A = 5 \cdot 2$$

$$A = 72 \quad A = 10$$

Total Area = A - B  
 Total Area = 72 - 10

Total Area = 62 yd<sup>2</sup>

12) Find the surface area AND volume of the rectangular prism below. \*\*Formulas on Page 28



$$V = lwh$$

$$V = (15)(5)(10)$$

V = 750 m<sup>3</sup>

$$SA = 2lw + 2lh + 2wh$$

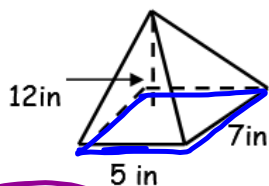
$$= 2(15)(5) + 2(15)(10) + 2(5)(10)$$

$$= 150 + 300 + 100$$

$$= 550$$

SA = 550 m<sup>2</sup>

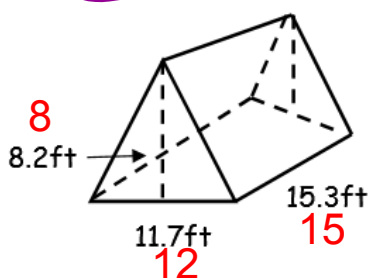
13) What is the volume of the rectangular pyramid:  $V = \frac{1}{3} lwh$  \_\_\_\_\_



$$V = \frac{1}{3} lwh \quad V = \frac{1}{3} (5)(7)(12)$$

$$V = 140 \text{ in}^3$$

14) Estimate the volume triangular prism: **\*\*Formula on Page 28** \_\_\_\_\_



$$V = \left(\frac{1}{2} bh\right)h$$

$$V \approx \left(\frac{1}{2} \cdot 12 \cdot 8\right) \cdot 15$$

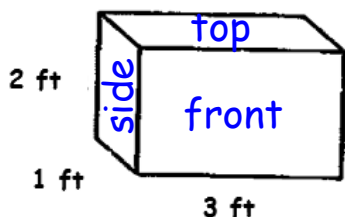
Volume

$$V \approx 720 \text{ ft}^3$$

15) Maxwell wants to know how much space his globe occupies. Should he find its surface area or volume? Explain your answer.

Maxwell should find its **volume** because volume is the amount of space a 3-dimensional figure occupies.

16) A toy maker will paint four sides of this toy chest. He will not paint the bottom or top surface. How many square feet of the chest will the toymaker paint?



Area of front/back

$$A = lw$$

$$A = 3 \times 2$$

$$A = 6$$

Area of Sides (2)

$$A = lw$$

$$A = 2 \times 1$$

$$A = 2$$

$$SA = 6 + 6 + 2 + 2$$

$$SA = 16 \text{ ft}^2$$

17) Estimate the volume of a cube whose side length is 5.6 centimeters. **\*\*Formula on Page 28**

Estimate: 5.6  $\rightarrow$  6

$$V = lwh$$

$$V \approx (6)(6)(6)$$

$$V \approx 216$$

$$V = 216 \text{ cm}^3$$

**\*Angle Relationships**

Complementary angles - Two angles are complementary if the **sum** of their angle measures is  $90^\circ$

Supplementary angles - Two angles are supplementary if the **sum** of their angle measures is  $180^\circ$

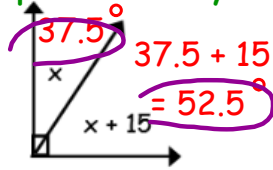
Vertical Angles - congruent angles formed by 2 intersecting lines. They are opposite each other.

18) Find the complement of a  $40^\circ$  angle.  $50^\circ$  19) Find the supplement of a  $55^\circ$  angle.  $125^\circ$

20) Two angles are vertical angles. If one of the angles measure  $135^\circ$ , what is the measure of the other angle?  $135^\circ$

Solve for x ALGEBRAICALLY and then find the measure of each angle

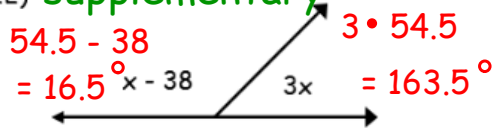
21) **complementary**



$$\begin{aligned} x + x + 15 &= 90 \\ 2x + 15 &= 90 \\ -15 &-15 \\ \hline 2x &= 75 \\ \frac{2x}{2} &= \frac{75}{2} \end{aligned}$$

$x = 37.5$

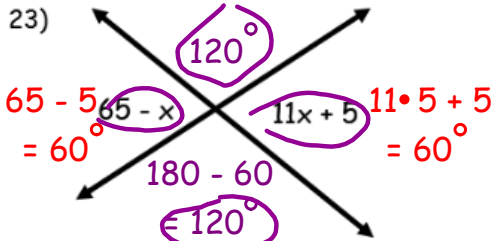
22) **supplementary**



$$\begin{aligned} x - 38 + 3x &= 180 \\ 4x - 38 &= 180 \\ +38 &+38 \\ \hline 4x &= 218 \\ \frac{4x}{4} &= \frac{218}{4} \end{aligned}$$

$x = 54.5$

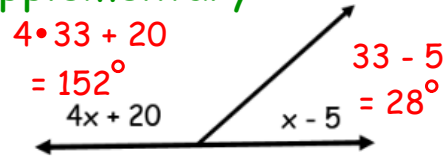
**vertical**



$$\begin{aligned} 65 - 1x &= 11x + 5 \\ -11x &-11x \\ \hline 65 - 12x &= 5 \\ -65 &-65 \\ \hline -12x &= -60 \\ -12 &-12 \end{aligned}$$

$x = 5$

24) **supplementary**



$$\begin{aligned} x - 5 + 4x + 20 &= 180 \\ 5x + 15 &= 180 \\ -15 &-15 \\ \hline 5x &= 165 \\ \frac{5x}{5} &= \frac{165}{5} \end{aligned}$$

$x = 33$

**TRIANGLES & QUADRILATERALS:**

- Triangles can be classified by their sides (scalene, isosceles, equilateral)
- Triangles can be classified by their angles (acute, right, obtuse)
- Use the **Triangle Inequality** to determine if three given sides form a triangle AND to determine the possible lengths for a third side given two side lengths.
- The sum of the angles of a triangle is **180°**
- The sum of the angles of a quadrilateral is **360°**

25) **Classify** each triangle according to the **measures of its angles:**

a) 40°, 50°, & 90°

right

b) 100°, 20°, & 60°

obtuse

c) 15°, 85°, & 80°

acute

26) **Classify** each triangle according to the **lengths of its sides.**

a) no congruent sides

scalene

b) 3 congruent sides.

equilateral

c) 2 congruent sides

isosceles

**Remember:** The inequality we need is the one that adds the two smallest sides.

- 27) If Michael has sticks measuring 14 cm, 5 cm and 11 cm, can he use his three sticks to form a triangle?  $5 + 11 > 14$

$$16 > 14 \text{ (True)}$$

Yes

- 28) If Kevin has straws measuring 4 cm, 9 cm and 13 cm, can he use his three straws to form a triangle?  $4 + 9 > 13$

$$13 > 13 \text{ (FALSE)}$$

No

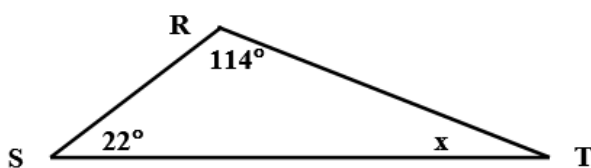
- 29) Two sides of a triangle are 3m and 9m. What are the possible lengths for the third side?

$$\text{Sum: } 9 + 3 = 12$$

$$\text{Difference: } 9 - 3 = 6$$

The 3<sup>rd</sup> must be larger than 6, but less than 12

- 30) Solve for the missing angle.



$$22 + 114 + x = 180$$

$$\cancel{136} + x = 180$$

$$\underline{-136} \quad \underline{-136}$$

$$x = 44$$

44°

- 31) Given a right triangle with an angle that measures 36°, and another angle that is 2x°.

Solve for x.  $90 + 36 + 2x = 180$

$$2x + 126 = 180$$

$$\underline{-126} \quad \underline{-126}$$

$$2x = 54$$

$$\underline{\div 2} \quad \underline{\div 2}$$

$$x = 27$$

- 32) In quadrilateral WXYZ,  $m\angle W$  is 102°,  $m\angle X$  is 136°,  $m\angle Y$  is 28°, find the  $m\angle Z$ .

Let  $x = m\angle Z$   $102 + 136 + 28 + x = 360$

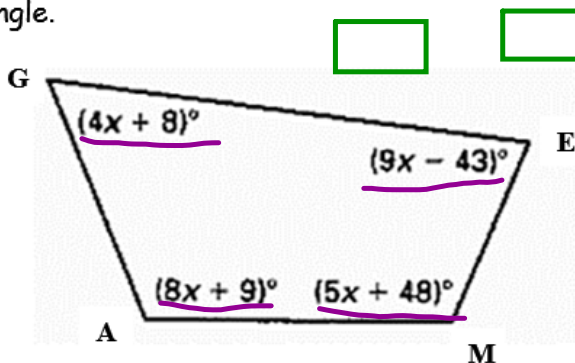
$$266 + x = 360$$

$$\underline{-266} \quad \underline{-266}$$

$$x = 94$$

The  $m\angle Z$  is 94°

- 33) Given quadrilateral GAME, solve for x ALGEBRAICALLY, then find the measure of each angle.



$$4x + 8 + 8x + 9 + 5x + 48 + 9x - 43 = 360$$

$$26x + 22 = 360$$

$$\underline{-22} \quad \underline{-22}$$

$$\underline{26x = 338}$$

$$\underline{\div 26} \quad \underline{\div 26}$$

$$x = 13$$

$$m\angle G = 4(13) + 8 = 60^\circ$$

$$m\angle A = 8(13) + 9 = 113^\circ$$

$$m\angle M = 5(13) + 48 = 113^\circ$$

$$m\angle E = 9(13) - 43 = 74^\circ$$

Solve &amp; check.

$$\begin{array}{r}
 -2x - 4 = -10 \\
 \phantom{-2x} + 4 \phantom{=} \phantom{-10} + 4 \\
 \hline
 \cancel{-2x} - \cancel{4} = \phantom{-} \cancel{-6} \\
 \phantom{-2x} - \phantom{4} = \phantom{-} \phantom{-6} \\
 x = 3
 \end{array}$$

$$\begin{array}{r}
 -2x - 4 = -10 \\
 -2(3) - 4 \stackrel{?}{=} -10 \\
 \checkmark -6 - 4 \stackrel{?}{=} -10 \\
 -10 = -10
 \end{array}$$

Solve &amp; graph.

$$\begin{array}{r}
 -2x - 6 \geq -10 \\
 \phantom{-2x} + 6 \phantom{\geq} \phantom{-10} + 6 \\
 \hline
 -2x \geq -4 \\
 \phantom{-2x} \phantom{\geq} \phantom{-4} \phantom{-10} \phantom{-10} \\
 \phantom{-2x} \phantom{\geq} \phantom{-4} \phantom{-10} \phantom{-10} \\
 x \leq 2
 \end{array}$$





$$-4(2x - 7) = -x$$

$$-8x + 28 = -x$$

$$+8x \qquad \qquad +8x$$

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$$\frac{28}{7} = \frac{7x}{7}$$

$$4 = x$$

$$-4(2x - 7) = -x$$

$$-4(\underbrace{2 \cdot 4}_{\checkmark} - 7) \stackrel{?}{=} -4$$

$$-4(\underbrace{8}_{\checkmark} - 7) \stackrel{?}{=} -4$$

$$-4 \cdot 1 \stackrel{?}{=} -4$$

$$-4 = -4$$