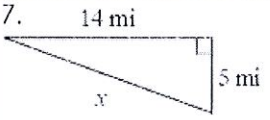
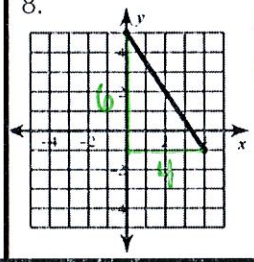
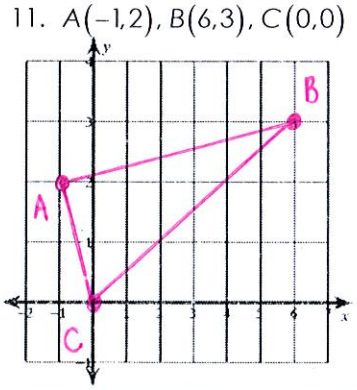
Name: _____ Date: _____

UNIT 6 TEST REVIEW

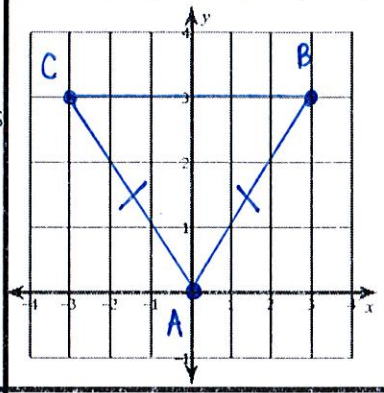
TOPIC	REMINDERS	EXAMPLES	
Writing the Equation of a Line	Two Points: Find the slope, plug in slope and one point into y=mx+b & solve for b, then sub m & b into slope intercept form	1. Write the equation of line that passes through the points (-5, -1) and (-3, 1). $m=\frac{y_2-y_1}{x_2-x_1}=\frac{1-(-1)}{-3-(-5)}=\frac{2}{2}=1$ $y=1x+b$ $1=1(-3)+b$ $1=-3+b$ $4=b$ $y=x+4$	2. Write the equation of line that passes through the points (2, 5) and (0, -1). $m=\frac{y_2-y_1}{x_2-x_1}=\frac{-1-5}{0-2}=\frac{-6}{-2}=3$ $y=3x+b$ $-1=3(0)+b$ $-1=0+b$ $-1=b$ $y=3x-1$
	Parallel: Use the slope and solve for b	3. Write an equation of the line that passes through (-3, 4) & is parallel to y = -3x – 1. $m=-3$ $y=-3x+b$ $4=-3(-3)+b$ $4=9+b$ $-5=b$ $y=-3x-5$	4. Write an equation of the line that passes through (7, -9) & is parallel to y = 2. $m=0$ $y=0x+b$ $-9=0(7)+b$ $-9=0+b$ $-9=b$ $y=-9$
	Perpendicular: Use the opposite reciprocal slope and solve for b	5. Write an equation of the line that passes through (5, -3) & is ⊥ to y = -5/2x+1. $m=2/5$ $y=2/5x+b$ $-3=2/5(5)+b$ $-3=2+b$ $-5=b$ $y=2/5x-5$	6. Write an equation of the line that passes through (-6, 2) & is ⊥ to y = 1. m = undefined $x=-6$ $x=-6$
Pythagorean Theorem	$a^2+b^2=c^2$	7.  14.87 mi $5^2+14^2=c^2$ $25+196=c^2$ $\sqrt{221}=\sqrt{c^2}$ $c\approx14.87$	8.  $4^2+6^2=c^2$ $16+36=c^2$ $\sqrt{52}=\sqrt{c^2}$ $c\approx7.21$ 7.21
Distance Formula	$\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$	9. (4,5)&(8,–7) $d=\sqrt{(8-4)^2+(-7-5)^2}$ $=\sqrt{4^2+(-12)^2}$ $=\sqrt{160}$ $=4\sqrt{10}$ $d\approx12.65$	10. (–7,6)&(2,–3) $d=\sqrt{(2-(-7))^2+(-3-6)^2}$ $=\sqrt{9^2+(-9)^2}$ $=\sqrt{162}$ $=9\sqrt{2}$ $d\approx12.73$
Classifying Triangles	Find the length of each side to classify as scalene, isosceles or equilateral Find the slope of each side to classify as a right triangle.	11. A(–1,2), B(6,3), C(0,0)  AC: $2^2+1^2=c^2$, $\sqrt{5}=\sqrt{c^2}$, $AC\approx2.24$ CB: $3^2+6^2=c^2$, $\sqrt{45}=\sqrt{c^2}$, $CB\approx6.71$ AB: $7^2+1^2=c^2$, $\sqrt{50}=\sqrt{c^2}$, $AB\approx7.07$ Slope of AC = –2 Slope of CB = $\frac{3}{6}=\frac{1}{2}$ scalene right triangle (has opposite reciprocal slopes)	

Classifying Triangles

Find the length of each side to classify as scalene, isosceles or equilateral

Find the slope of each side to classify as a right triangle.

12. $A(0,0), B(3,3), C(-3,3)$



$CB = 6$

AC: $3^2+3^2=c^2$, $\sqrt{18}=\sqrt{c^2}$, $AC = 3\sqrt{2}$

AB: $3^2+3^2=c^2$, $\sqrt{18}=\sqrt{c^2}$, $AB = 3\sqrt{2}$

Isosceles Triangle

Perimeter & Area

Perimeter: Distance Around an Object

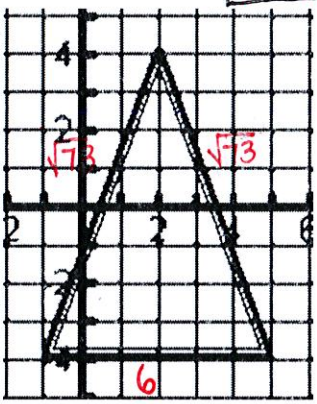
Area of a Parallelogram: Length * Height

Area of a Triangle: ½ (base)(height)

13. Find the area and perimeter.

$3^2+8^2=c^2$, $\sqrt{73}=\sqrt{c^2}$, $c=\sqrt{73}$

$P = 6+\sqrt{73}+\sqrt{73}$, $P = 6+2\sqrt{73}$ units, $P \approx 23.09$ units



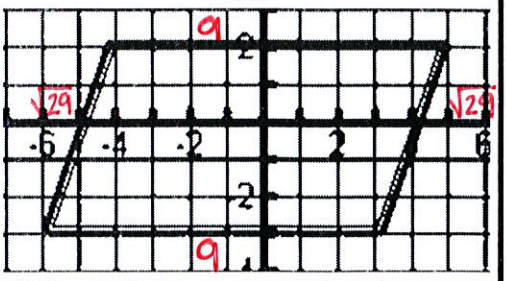
$A = \frac{bh}{2} = \frac{8(6)}{2}$, $A = 24$ units^2

14. Find the area and perimeter.

$5^2+2^2=c^2$, $\sqrt{29}=\sqrt{c^2}$, $c=\sqrt{29}$

$P = 9+9+\sqrt{29}+\sqrt{29}$, $P = 18+2\sqrt{29}$ units, $P \approx 28.77$ units

$A = b(h) = 9(5) = 45$, $A = 45$ units^2



Midpoint

$$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

you NEED to memorize this formula

15. $Endpoint_1(5,1)$, $Endpoint_2(6,7)$

$\left(\frac{5+6}{2}, \frac{1+7}{2}\right)$, $\left(\frac{11}{2}, \frac{8}{2}\right)$, $(5.5, 4)$

16. $Endpoint_1(-6,3)$, $Endpoint_2(10,9)$

$\left(\frac{-6+10}{2}, \frac{3+9}{2}\right)$, $\left(\frac{4}{2}, \frac{12}{2}\right)$, $(2, 6)$

17. $Midpoint(8,3)$, $Endpoint_1(-2,2)$

$\frac{x_1+-2}{2} = 8$, $x_1 - 2 = 16$, $x_1 = 18$

$\frac{y_1+2}{2} = 3$, $y_1 + 2 = 6$, $y_1 = 4$

$(18, 4)$

18. $Midpoint(9,1)$, $Endpoint_1(5,-7)$

$\frac{x_1+5}{2} = 9$, $x_1 + 5 = 18$, $x_1 = 13$

$\frac{y_1+-7}{2} = 1$, $y_1 - 7 = 2$, $y_1 = 9$

$(13, 9)$

Partitions

$$\left(\frac{bx_1+ax_2}{b+a}, \frac{by_1+ay_2}{b+a}\right)$$

19. Find a point P on the segment with endpoints **A(-1, -3)** & **B(7, 1)** that partitions it in a 3:1 ratio. ($a=3$, $b=1$)

$\left(\frac{1(-1)+3(7)}{1+3}, \frac{1(-3)+3(1)}{1+3}\right)$

$\left(\frac{20}{4}, \frac{0}{4}\right) \rightarrow (5, 0)$

20. Find a point T on the segment with endpoints **A(-4, -6)** & **B(2, 3)** that partitions it in a 2:1 ratio. ($a=2$, $b=1$)

$\left(\frac{1(-4)+2(2)}{1+2}, \frac{1(-6)+2(3)}{1+2}\right)$

$\left(\frac{0}{3}, \frac{0}{3}\right) \rightarrow (0, 0)$