PreAlgebra

Key

Benchmark Review #2

Part 12: Square Roots and Absolute Values

Name the first 10 perfect squares: 1,4,9, 16, 25, 36, 49, 64, 81, 100

What is a square root? A number when multiplied by itself that results in another number. Example: $3 \cdot 3 = 9$ therefore the square root of 9 is 3.

What does Absolute Value mean? Distance from zero

When you find the absolute value of a number it is always a positive number.

12.1 SQUARE ROOTS:

Simplify. If a problem is not a perfect square estimate to the nearest whole number.

a) $-\sqrt{121}$ b) $\sqrt{70}$ c) $\sqrt{\frac{16}{81}}$ d) $\sqrt{145}$

12.2 Absolute Value:

a) $\left|-\frac{5}{6}\right|$ b) $-\left|-\frac{9}{10}\right|$ c) $-\left|-\frac{6}{7}\right|+\left|-\frac{8}{11}\right|$ d) $-|-2-(-6)|$

Part 11: Graphing an Equation

Example:

x	-1	0	1	2
y	-1	1	3	5

(+1, +1, +1 across the x row; +2, +2, +2 across the y row)

Rule = $y = \frac{2}{1}x + 1$

x is zero

x	0
y	1

Another word for rule is? A) Algebraic expression (B) Equation C) Term

The growth rate is? (A) Coefficient in the equation B) Constant C) Variable

The value of "y" when "x" is zero tells us what part of the rule? A) Coefficient (B) Constant C) Nothing

11.1 Graphing an Equation

Write the rule for each table

a)

x	-1	0	1	2
y	-7	-4	-1	2

b)

x	-1	0	1	2
y	6	5	4	3

Part 10: Word Problems

Write words that could mean to do the following operations-

Add:	Subtract:	Multiply:	Divide:
sum total	difference take away	product of	quotient break into

*A good strategy with word problems is to underline or highlight key words and ignore extra information.

10.1 Word Problems

a) Jonathan likes to go to the movies. He always sees a matinee to save money, then buys concessions based on how much money he has left. He worked hard all weekend and was able to save $22.50 from his allowance, plus $3.75 that he had leftover from lunch. If popcorn costs $7.25, the movie costs $5.50, and candy costs $2.25 for each box, how many boxes of candy can he purchase?

b) A square courtyard has a circular fountain in the middle. If the fountain touches each side of the courtyard and has an area of 314 sq. yards, how big is he courtyard? (Draw a picture to help)

Part 9: Composite Shapes

*Break down composite shapes into smaller shapes that you can find the area of, then add the pieces together.

$\triangle = \frac{1}{2}bh$ or $\frac{bh}{2}$ $\bigcirc = \pi r^2$ $\cap = \frac{\pi r^2}{2}$

Write the area formulas for the following shapes: $\square = l \cdot w$ $\square = s^2$ $\square = \frac{1}{2}h(b_1 + b_2)$

Triangle, Circle, Half a Circle, Rectangle, Square, Trapezoid

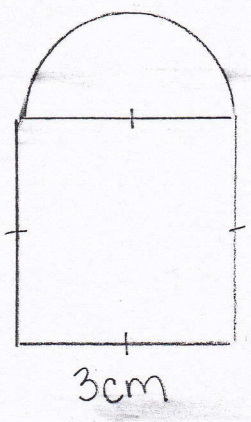
How do you find the perimeter of a triangle? What about a circle? → circumference $= \pi d$ or $2\pi r$

add the sides

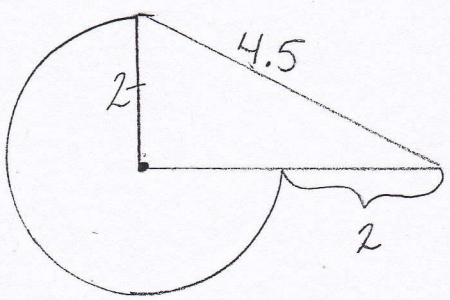
9.1 Composite Shapes

Find the area and perimeter of the following.

a)



b)



Part 8: Fractions

What two operations require you to find a common denominator? Adding & subtracting

When you divide fractions which number do you flip? Always the second

8.1

a) $3\frac{5}{8}+\frac{23}{24}$ b) $5\frac{1}{3}-4\frac{2}{3}$ c) $4\frac{4}{5}\div 1\frac{1}{5}$ d) $(2\frac{5}{6})(1\frac{1}{7})$

Part 7: Order of Operations

Please Excuse My Dear Aunt Sally
What does each letter stand for?

P: Parentheses E: Exponent M: Multiplication
D: Division A: Addition S: Subtraction

What is special about multiplication and division? Do any other operations have the same rule?
Mul + div is done in the order you see it left to right. Add & Sub have the same rule

7.1 Order of operations

a) $(2-3\cdot 4)^2-3\cdot 2$ b) $\frac{5-2(3\cdot 2\div 3)^2}{2^2-4(-1)^3-5}$ c) $\frac{40-5}{5+2}+6(4-2)$

Part 6: Geometry

Comp: Angles that add to 90°
Sup: Angles that add to 180°
Adjacent: Angles next to each other that share a common side

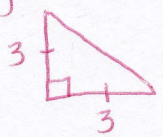
Vertical: Angles across from each other. They are equal

Define the following terms: complimentary, supplementary, adjacent and vertical angles

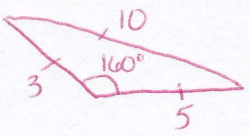
What is the total degree measure of the interior angles of a triangle, quadrilateral?
180° 360°

Draw an example of the following: Right isosceles triangle, Scalene obtuse triangle

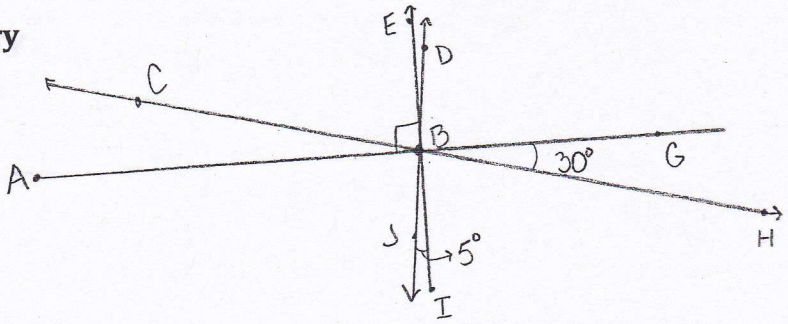
Right Isosceles



Scalene Obtuse



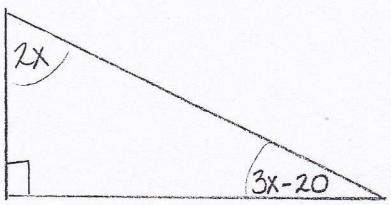
6.1 Geometry



a) Which angle is complimentary to <ABC?

b) What is the measure of <ABC?

c) Solve for x in the triangle to the right.



* Benchmark Review #2 *

Key

12.1

a) -11

b) ≈ 8

$\sqrt{64}$ $\sqrt{70}$ $\sqrt{81}$

8 ← closer 9

c) $\frac{4}{9}$

$\frac{\sqrt{16}}{\sqrt{81}} = \frac{4}{9}$

d) ≈ 12

$\sqrt{144}$ $\sqrt{145}$ $\sqrt{169}$

12 ← closer 13

12.2

a) $\frac{5}{6}$

b) $-\frac{9}{10}$

$-\left|\frac{-9}{10}\right| \rightarrow \frac{9}{10}$

c) $-\frac{10}{77}$

$-\left|-\frac{4}{7}\right| + \left|-\frac{8}{11}\right|$

$-\frac{4}{7} + \frac{8}{11}$

$\frac{-66}{77} + \frac{56}{77} = \frac{-10}{77}$

d) -4

$-|-2-(-6)|$

$-|-2+6|$

$-|4|$

-4

11.1

a) $y = 3x - 4$

adds 3 each time

when $x=0$, $y=-4$

b) $y = -x + 5$

goes down one each time

y value when $x=0$

10.1

a) 6 boxes

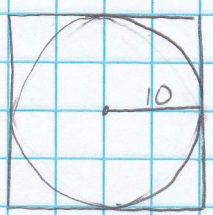
$\underbrace{22.50 + 3.75}_{\text{brings to theater}} - 7.25 - 5.50 = \$13.50 \text{ left} \div 2.25 = 6$

-7.25 popcorn, -5.50 movie

$\div 2.25$: cost of each box of candy

b) 400 yds^2

If the radius is 10, the square is 20 by 20 or 400 yds^2.



circle area πr^2

$\frac{3.14}{3.14} = \frac{3.14r^2}{3.14}$

$100 = r^2 \rightarrow r = 10$

9.1 a) area $\approx 12.5325 cm^2$
perimeter $\approx 13.71 cm$

$a\square = 3 \cdot 3 = 9$

$a\cap = \frac{3.14(1.5)^2}{2} = 3.5325$

$9 + 3.5325 = 12.5325 cm^2$

perimeter = 3 + 3 + 3 + 4.71 = 13.71
(3 sides: square; ½ circumference of circle)

$\pi d \div 2$
$(3.14)(3) \div 2 =$

b) area $\approx 13.42 u^2$ (height: 2, base of the triangle: 4, entire) perimeter $\approx 15.92u$ or $15\frac{13}{14}$

$a\triangle = \frac{2 \cdot 4}{2} = 4$

$a\bigcirc = \pi r^2$
$3.14(2)^2 = 12.56$

*you only have $\frac{3}{4}$ of the circle

$(.75) = 9.42 + 4 = 13.42 u^2$

perimeter = $\frac{3}{4}$ of circumference

$\frac{3}{4}\left(\frac{22}{7}\right)\left(\frac{4}{1}\right) = \frac{66}{7} = 9\frac{3}{7}$

OR

$.75(3.14)(4) \approx 9.42$

Triangle

$+ 4.5 + 2 =$

8.1 a) $4\frac{7}{12}$

$3\frac{5}{8} \cdot \frac{3}{3} = \frac{15}{24}$

$+ \frac{23}{24} \quad \frac{23}{24}$

$3\frac{38}{24}$

$4\frac{14}{24} \rightarrow \boxed{4\frac{7}{12}}$

b) $\frac{2}{3}$

$5\frac{1}{3} = \frac{16}{3}$

$-4\frac{2}{3} = -\frac{14}{3}$

$\frac{2}{3}$

c) 4

$4\frac{4}{5} \div 1\frac{1}{5}$

$\frac{24}{5} \div \frac{6}{5}$

$4\frac{24}{5} \cdot \frac{5}{6}^{1}$

d) $3\frac{5}{21}$

$2\frac{5}{6} \cdot 1\frac{1}{7}$

$\frac{17}{3\cancel{6}} \cdot \frac{\cancel{8}^{4}}{7} = \frac{68}{21} = 3\frac{5}{21}$

7.1 a) 94

$(2 - 3 \cdot 4)^2 - 3 \cdot 2$
$(2 - 12)^2 - 6$
$(-10)^2 - 6$
$100 - 6 = \boxed{94}$

b) -1

$\frac{5 - 2(3 \cdot 2 \div 3)^2}{2^2 - 4(-1)^3 - 5} = \frac{5 - 2(2)^2}{2^2 - 4(-1)^3 - 5}$

$\frac{5 - 2(4)}{4 - 4(+1) - 5}$

$\frac{5 - 8}{4 + 4 - 5} = \frac{-3}{3} = \boxed{-1}$

c) 17

$\frac{40 - 5}{5 + 2} + 6(4 - 2)$

$\frac{35}{7} + 6(2)$

$5 + 12 = \boxed{17}$

6.1 a) $\angle EBC$ (adds to 90°) b) 30° (vertical angle) c) 22

$$2x+3x-20+90=180$$
$$5x+70=180$$
$$-70 \quad -70$$
$$\frac{5x}{5}=\frac{110}{5}$$
$$\boxed{x=22}$$

5.1 a) $^{9}/_{55}$ b) $^{1}/_{6}$

$$-3(5x-24)=2(5x+23)+17$$
$$-45x+72=10x+46+17$$
$$-45x+72=10x+63$$
$$+45x \quad +45x$$
$$72=55x+63$$
$$-63 \quad -63$$
$$\frac{9}{55}=\frac{55x}{55}$$
$$\boxed{x=9/55}$$

$$2-1(x+1)=5x$$
$$2-x-1=5x$$
$$1-x=5x$$
$$+x \quad +x$$
$$\frac{1}{6}=\frac{6x}{6}$$
$$\boxed{x=\frac{1}{6}}$$

4.1 a) 36 b) 17

$3n^2(m+n)$; $m=1$, $n=2$

$3(2)^2(1+2)$

$3(4)(3)$

$12(3)=36$

$y \div 4+y(x+x)$; $x=2$ $y=4$

$4 \div 4+4(2+2)$

$1+4(4)$

$1+16=\boxed{17}$

3.1 a) $23xy+17$ b) $6x+52$ c) $4x^2-2x$

$4 \cdot 2x \cdot 3y-xy+17$

$24xy-xy+17$

$23xy+17$

$2[3(x+7)+5]$

$2[3x+21+5]$

$2[3x+26]$

$6x+52$

$3x^2+x^2+5x-7x$

$4x^2-2x$

2.1 a) 1 b) 8 c) -27

1.1 a) 4 b) -8 c) 6 d) -6

$-2-5-8+9$

$-7-8+9$

$-15+9$