1. What is the value of $\dfrac{x^2-4y}{2}$ for $x=4$ and $y=-3$?
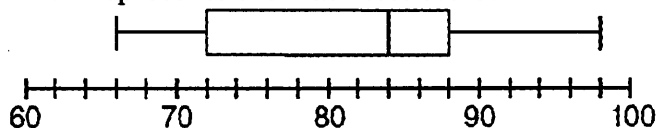
2. Cassandra bought an antique dresser for $500. If the value of her dresser increases 6% annually, what will be the value of Cassandra's dresser at the end of 3 years to the *nearest dollar*?

3. Given: $A = \{3,6,9,12,15\}$
        $B = \{2,4,6,8,10,12\}$

   What is the union of sets A and B?   What is the intersection of sets A and B?

4. The box-and-whisker plot below represents the math test scores of 20 students.

List the minimum, lower quartile, median, upper quartile, and the maximum along with the range and inter-quartile range.

5. Corinne calculated the area of a paper plate to be 50.27 square inches. If the actual area of the plate is 55.42 square inches, what is the relative error in calculating the area, to the *nearest thousandth*?

6. If Jimmy selects three marbles out of a bag containing 5 white, 6 red, and 3 green. What is the probability that he selects a white, then a red, and then a green without replacement?

7. Find the quotient of $\left(8.4\times10^9\right)$ and $\left(2.1\times10^{-6}\right)$.
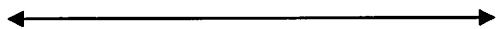
8. Solve the following equations for x:

a. $\dfrac{x+5}{7} = \dfrac{x-4}{-2}$

b. $13x - 2(x+4) = 8x + 1$

9. Solve the following inequalities for x and graph:
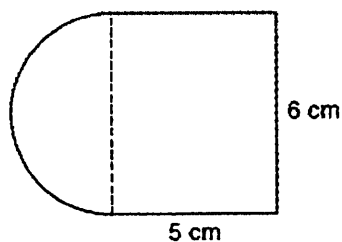
a. $-6x - 17 \geq 8x + 25$

b. $3(2x-1) \leq 4x + 7$

10. Simplify the following expressions using only positive exponents.

a. $\left(-4x^3 y^{-6}\right)\left(3x^{-2} y^3\right)$

b. $\dfrac{\left(8x^4\right)^2}{16x}$

11. Find the *area* of the composite shape in terms of π.

6 cm

5 cm

Algebra Quarter 2 Assessment Review   Name ___Key___

1. What is the value of $\frac{x^2-4y}{2}$ for $x=4$ and $y=-3$?

$$\frac{4^2-4(-3)}{2} = \frac{16+12}{2} = \frac{28}{2} = \boxed{14}$$

2. Cassandra bought an antique dresser for $500. If the value of her dresser increases 6% annually, what will be the value of Cassandra's dresser at the end of 3 years to the *nearest dollar*?

$$500(1.06)^3 = \boxed{\$595.51}$$

$$\begin{array}{r}100\% \\ 6\% \\ \hline 106\% \to 1.06\end{array}$$

3. Given: $A = \{3,6,9,12,15\}$
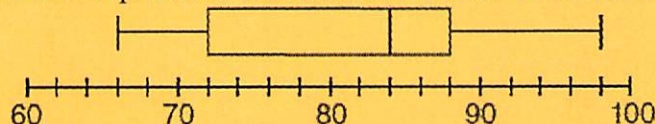 $B = \{2,4,6,8,10,12\}$

What is the union of sets A and B?   What is the intersection of sets A and B?

$A \cup B: \{2,3,4,6,8,9,10,12,15\}$ $A \cap B: \{6, 12\}$

4. The box-and-whisker plot below represents the math test scores of 20 students.

List the minimum, lower quartile, median, upper quartile, and the maximum along with the range and inter-quartile range.

min: 66 Q_3: 88   range: $98-66 = 32$
Q_1: 72   max: 98   IQ Range: $\frac{Q_3-Q_1}{88-72}=16$
med: 84

5. Corinne calculated the area of a paper plate to be 50.27 square inches. If the actual area of the plate is 55.42 square inches, what is the relative error in calculating the area, to the *nearest thousandth*?

relative error $= \dfrac{\text{difference}}{\text{actual}} = \dfrac{55.42-50.27}{55.42} = \dfrac{5.15}{55.42} = \boxed{.093}$

6. If Jimmy selects three marbles out of a bag containing 5 white, 6 red, and 3 green. What is the probability that he selects a white, then a red, and then a green without replacement?

$$\frac{5}{14} \cdot \frac{6}{13} \cdot \frac{3}{12} = \boxed{\frac{90}{2184} \quad \text{or} \quad \frac{15}{364}}$$

7. Find the quotient of (8.4×10^9) and (2.1×10^{-6}).

$$(8.4\times10^9) \div (2.1\times10^{-6}) = \boxed{4\times10^{15}}$$

8. Solve the following equations for x:

a. $\dfrac{x+5}{7}=\dfrac{x-4}{-2}$

$-2(x+5) = 7(x-4)$

$-2x - 10 = 7x - 28$
$+2x \qquad\quad +2x$

$-10 = 9x - 28$
$+28 \qquad\quad +28$

$\dfrac{18}{9} = \dfrac{9x}{9}$

$\boxed{2 = X}$

b. $13x - 2(x+4) = 8x+1$

$13x - 2x - 8 = 8x + 1$

$11x - 8 = 8x + 1$
$-8x \qquad -8x$

$3x - 8 = 1$
$+8 \quad +8$

$3x = 9$

$\boxed{X = 3}$

9. Solve the following inequalities for x and graph:

a. $-6x - 17 \geq 8x + 25$
$+6x \qquad\quad +6x$

$-17 \geq 14x + 25$
$-25 \qquad\qquad -25$

$-42 \geq 14x$

$\boxed{-3 \geq X}$ or $\boxed{X \leq -3}$

$-5 \quad -4 \quad -3 \quad -2 \quad -1$

b. $3(2x-1) \leq 4x+7$

$6x - 3 \leq 4x + 7$
$-4x \qquad\quad -4x$

$2x - 3 \leq 7$
$+3 \quad +3$

$\dfrac{2x}{2} \leq \dfrac{10}{2}$

$\boxed{X \leq 5}$

$3 \quad 4 \quad 5 \quad 6 \quad 7$

10. Simplify the following expressions using only positive exponents.

a. $\left(-4x^3 y^{-6}\right)\left(3x^{-2}y^3\right)$

$-12xy^{-3} = \boxed{\dfrac{-12x}{y^3}}$

b. $\dfrac{\left(8x^4\right)^2}{16x}$

$\dfrac{(8x^4)(8x^4)}{16x} = \dfrac{64x^8}{16x} = \boxed{4x^7}$

11. Find the *area* of the composite shape in terms of π.

3 cm

6 cm

5 cm
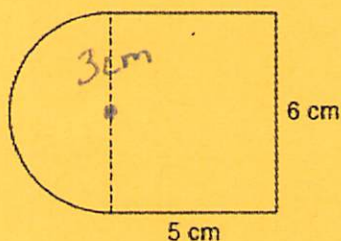
Area $\square$

$A = L \cdot W$

$A = 6 \cdot 5$

$A = 30$

Area D

$A = \dfrac{\pi r^2}{2}$

$A = \dfrac{\pi 3^2}{2}$

$A = 4.5\pi$

$\boxed{\begin{array}{c}\text{Total Area}\\ 4.5\pi + 30\end{array}}$