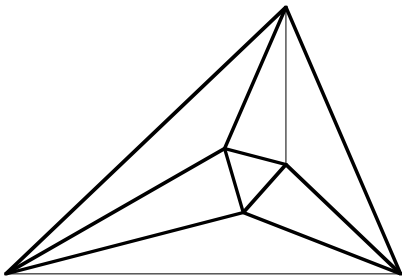
Meet 3 – Event A 2014-2015

Questions are worth 2-2-2-4-4 points respectively.

NO CALCULATORS ALLOWED



_____cm__1. How many centimeters are in one kilometer?
Write your answer in scientific notation.

$x =$_____2. Solve:

$$3x^2 = 147$$

_____3. Simplify:

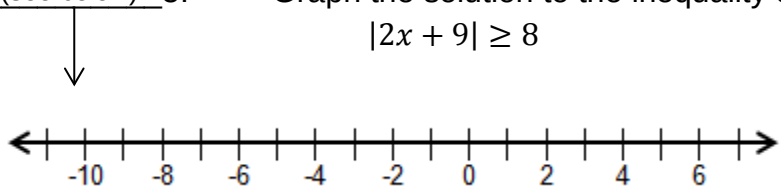
$$\left(\frac{4a^{-3}bc^5}{b^2c}\right)^{-1}$$

Write your answer using only positive exponents.

_____4. A market sells 40 bunches of broccoli per day. Each bunch weighs 1.2 pounds. If there are 24 pounds of broccoli in a bushel, how many bushels of broccoli does the market sell per week?

(see below)_____5. Graph the solution to the inequality on the number line.

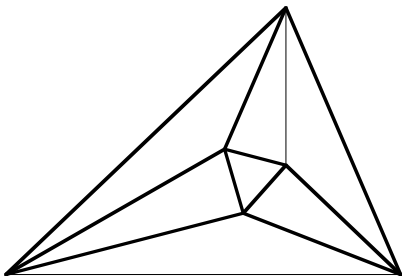
$$|2x + 9| \geq 8$$



Name_____School_____

Meet 3 – Event A 2014-2015

ANSWERS



Questions are worth 2-2-2-4-4 points respectively.

1×10^5 cm 1. $\frac{100 \text{ cm}}{1 \cancel{\text{m}}} \times \frac{1{,}000 \cancel{\text{m}}}{1 \text{ km}} = \frac{100{,}000 \text{ cm}}{1 \text{ km}} = \mathbf{1 \times 10^5} \text{cm/km}$

$x = -7, 7$ 2. $3x^2 = 147$

$x^2 = 49$

$x = \pm \mathbf{7}$

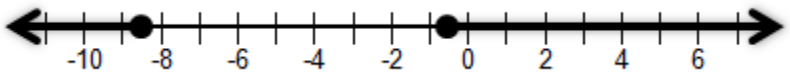
$\frac{a^3 b}{4c^4}$ 3. $\left(\frac{4a^{-3}bc^5}{b^2c}\right)^{-1} = \frac{b^2c}{4a^{-3}bc^5} = \frac{a^3b^2c}{4bc^5} = \mathbf{\frac{a^3 b}{4c^4}}$

14 4. $\frac{40 \cancel{\text{bunches}}}{1 \cancel{\text{day}}} \times \frac{1.2 \cancel{\text{lbs}}}{1 \cancel{\text{bunch}}} \times \frac{1 \text{ bushel}}{24 \cancel{\text{lbs}}} \times \frac{7 \cancel{\text{days}}}{1 \text{ week}} = \frac{336 \text{ bushels}}{24 \text{ weeks}} = \frac{\mathbf{14} \text{ bushels}}{\text{week}}$

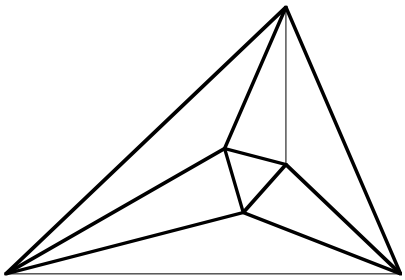
(see below) 5. $2x + 9 \geq 8$ or $2x + 9 \leq -8$

$2x \geq -1$ or $2x \leq -17$

$\boldsymbol{x \geq -\frac{1}{2}}$ or $\boldsymbol{x \leq -8\frac{1}{2}}$

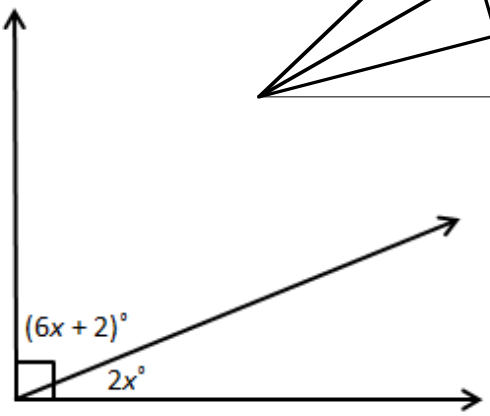


Meet 3 – Event B 2014-2015



Questions are worth 2-2-2-4-4 points respectively.

NO CALCULATORS ALLOWED



_____ *x* = _____1. Refer to the diagram. What is *x*?

_____2. Simplify:

$$2^7 \bullet 4^{-2}$$

Write your answer in exponential form.

_____ $x =$ _____3. Solve:

$$2x - (3x + 7) = 4(x - 9) - 1$$

Use the information below to answer questions 4 and 5.

Camden's family drives from Rochester to Ely, a total distance of 318 miles. The family car can travel between 20 and 30 miles per gallon of gas, inclusive. The gas tank holds 16 gallons.

_____4. Write an inequality to express all possible numbers of gallons of gas, *g*, the trip could require.

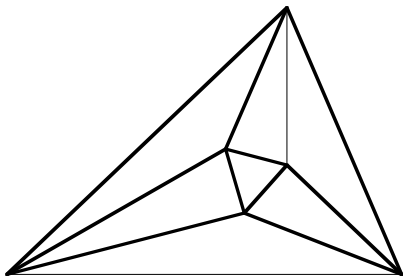
_____gallons 5. When the family leaves for Ely, the gas tank is $\frac{5}{8}$ full. Assume they only stop to refuel when the tank is empty. If the car gets optimum gas mileage, exactly how many gallons of gas will be in the tank when Camden's family arrives in Ely?

Name_____School_____

Meet 3 – Event B 2014-2015

ANSWERS

Questions are worth 2-2-2-4-4 points respectively.



_____ 1. $6x + 2 + 2x = 90$
$8x + 2 = 90$
$8x = 88$
$x = \mathbf{11}$

_____ 2. $2^7 \bullet 4^{-2} = 2^7 \bullet (2^2)^{-2} = 2^7 \bullet 2^{-4} = \mathbf{2^3}$

_____ 3. $2x - (3x + 7) = 4(x - 9) - 1$
$2x - 3x - 7 = 4x - 36 - 1$
$-x - 7 = 4x - 37$
$-5x = -30$
$x = \mathbf{6}$

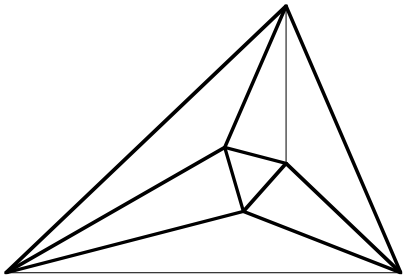
_____ 4. $\frac{1\ g}{20\ \cancel{\text{mi}}} \times 318\ \cancel{\text{mi}} = \mathbf{15.9}\ \boldsymbol{g}$ $\frac{1\ g}{30\ \cancel{\text{mi}}} \times 318\ \cancel{\text{mi}} = \mathbf{10.6}\ \boldsymbol{g}$

_____ 5. $\frac{5}{8}$(16) = 10 gallons

$\frac{30\ \text{mi}}{1\ \cancel{\text{g}}} \times 10\ \cancel{\text{g}} = 300\ \text{miles};$ 318 – 300 = 18 miles

$\frac{1\ \text{g}}{30\ \cancel{\text{mi}}} \times 18\ \cancel{\text{mi}} = 0.6\ \text{gallons};$ 16 – 0.6 = **15.4** gallons

Meet 3 – Team Event 2014-2015

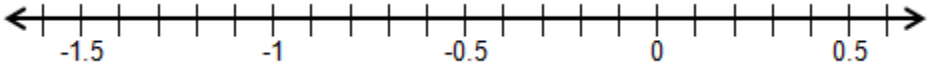


Questions are worth 4 points each. *NO CALCULATORS ALLOWED*

_____1. Write the product of four thousandths and three tenths in scientific notation.

(see below) 2. Graph the solution to the inequality on the number line.

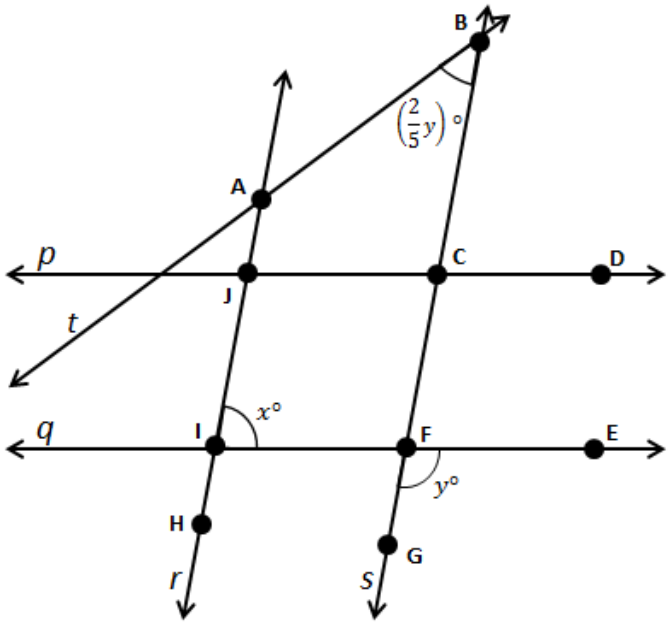
$$6x + 4.5 < x$$



Use the diagram to answer questions 3 – 6.

In the diagram, line *p* is parallel to line *q*, and line *r* is parallel to line *s*. Line *t* is a transversal.

y = _____3. Write the value of *y* in terms of *x*.



_____4. Which term can be used to describe angle EFG and angle FIJ?

A. complementary
B. corresponding
C. supplementary
D. vertical

_____° 5. What is the measure of angle BAJ when *x* = 80?

_____6. Which term can be used to describe angle IFG and angle JCF?

A. complementary
B. corresponding
C. supplementary
D. vertical

_____7. Solve the inequality for *m* in terms of *a*, *t*, and *h*.

$$1 < 3[m + (at)^{-1}h]$$

_____8. The difference of 14 and half a number, *n*, is at least 50. Write and solve an inequality to express all possible values of *n*.

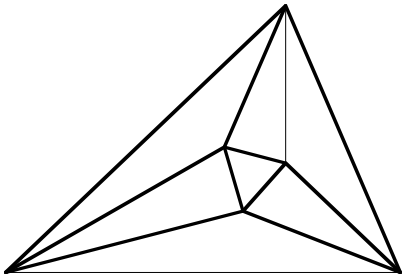
_____ft 9. A bald eagle flies at a maximum speed of 75 miles per hour. A wild turkey flies at a maximum speed of 1,600 yards per minute. At maximum speed, how many more feet does the bald eagle fly than the turkey in 30 seconds?

_____10. Write the absolute value inequality for $-8 \leq x \leq 20$.

Name_____School_____

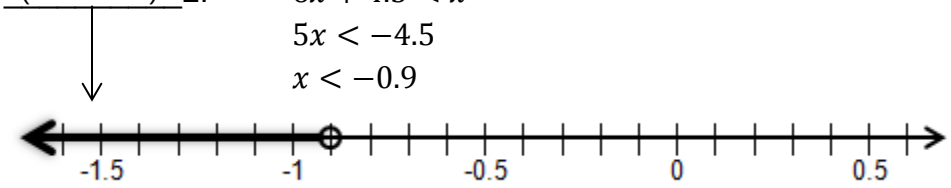
Meet 3 – Team Event 2014-2015

Questions are worth 4 points each. **ANSWERS**



_____1.2×10^{-3}_____1. $(0.004)(0.03) = (4 \times 10^{-3})(3 \times 10^{-1}) =$
$12 \times 10^{-4} = \mathbf{1.2 \times 10^{-3}}$

_____(see below)_____2. $6x + 4.5 < x$
$5x < -4.5$
$x < -0.9$



_____$y = 180 - x$_____3.

_____C_____4. C. supplementary

_____140°_____5. $\frac{2}{5}y$ + <BAJ = 180; $\frac{2}{5}(180 - x)$ + <BAJ = 180; $\frac{2}{5}(180 - 80)$ + <BAJ = 180
$\frac{2}{5}(100)$ + <BAJ = 180; 40 + <BAJ = 180; <BAJ = **140°**

_____B_____6. B. corresponding

_____$m > \frac{1}{3} - \frac{h}{at}$_____7. $1 < 3[m + (at)^{-1}h]$
***or)** $m > \frac{at-3h}{3at}$ $1 < 3[m + \frac{h}{at}]$; $1 < 3m + \frac{3h}{at}$; $1 - \frac{3h}{at} < 3m$; $\mathbf{\frac{1}{3} - \frac{h}{at} < m}$

_____$n \leq -72$_____8. $14 - \frac{1}{2}n \geq 50$; $-\frac{1}{2}n \geq 36$; $\boldsymbol{n \leq -72}$

_____900 ft_____9. $\frac{75\ \cancel{\text{mi}}}{\cancel{\text{h}}} \times \frac{1\ \cancel{\text{h}}}{3600\ \cancel{\text{sec}}} \times \frac{5280\ \text{ft}}{1\ \cancel{\text{mi}}} \times 30\ \cancel{\text{sec}} = \frac{(75)(5280)(30)\text{ft}}{3600} = 3300\ \text{ft}$
$\frac{1600\ \cancel{\text{yd}}}{\cancel{\text{min}}} \times \frac{1\ \cancel{\text{min}}}{60\ \cancel{\text{sec}}} \times \frac{3\ \text{ft}}{1\ \cancel{\text{yd}}} \times 30\ \cancel{\text{sec}} = \frac{(1600)(3)(30)\text{ft}}{60} = 2400\ \text{ft}$; 3300 – 2400 = **900**

_____$|x - 6| \leq 14$_____10. 20 – (-8) = 28; 28/2 = **14**; -8 + 14 = **6**