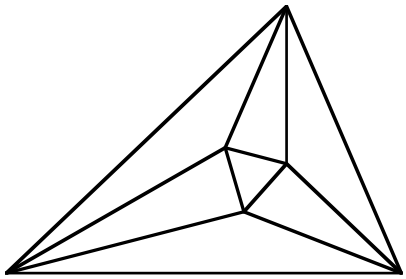
# Meet 2 - Event A 2011-2012



Questions are worth 2-2-2-4-4 points respectively.
Remember your units.

# NO CALCULATORS ALLOWED

_____1. $|2-7| = ?$

_____2. Solve for x: $x! = 6$,

_____3. $2^3 \bullet 4^{-1} = ?$

_____4. What is the coordinate of a point 3/4 of the way from 3 to 15?

_____5. Write as one factorial number: $2^8 \bullet 3^4 \bullet 5^2 \bullet 7$

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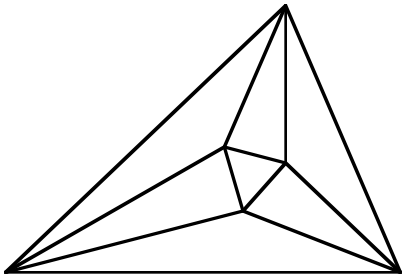
# Meet 2 - Event A 2011-2012 Answers



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Remember your units.

5 1. $|2-7| = |^{-}5| = 5$

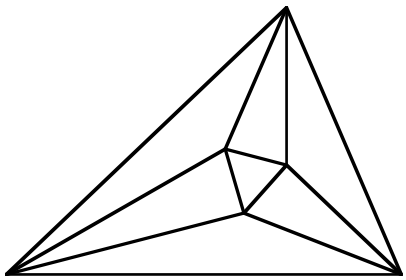
3 2. $1 \bullet 2 \bullet 3 = 6$ so $x = 3$

2 3. $2^3 \bullet 4^{-1} = \frac{2^3}{4} = \frac{8}{4} = 2$ or $4^{-1} = \left(2^2\right)^{-1} = 2^{-2}$ so $2^3 \bullet 2^{-2} = 2^1 = 2$

12 4. Take two midpoints:
$\frac{3+15}{2} = \frac{18}{2} = 9$, $\frac{9+15}{2} = \frac{24}{2} = 12$; or $15 - 3 = 12$ is the distance, $\frac{3}{4} \bullet 12 = 9$ and $3 + 9 = 12$

10! 5. The number must be 7! or more, so:
$7! = 2 \bullet 3 \bullet 4 \bullet 5 \bullet 6 \bullet 7$
$2^8 \bullet 3^4 \bullet 5^2 \bullet 7 = 2 \bullet 3 \bullet (2 \bullet 2) \bullet 5 \bullet (2 \bullet 3) \bullet 7 \bullet 2^4 \bullet 3^2 \bullet 5$
$2^4 \bullet 3^2 \bullet 5 = 2^3 \bullet 3^2 \bullet 2 \bullet 5 = 8 \bullet 9 \bullet 10$

# Meet 2 - Event B 2011-2012



Questions are worth 2-2-2-4-4 points respectively.
Remember your units.

# NO CALCULATORS ALLOWED

_____1. Write in scientific notation: 0.000205

_____2. What number is next in this sequence: $\frac{1}{3}$, 1, 3, __?

_____3. Solve for both values of $x$: $|2x-1|=5$.

_____4. Solve for both values of $x$: $10-3|x+2|=4$

_____5. What is the midpoint between the two values of $x$ that satisfy $|3x-2|=4$?

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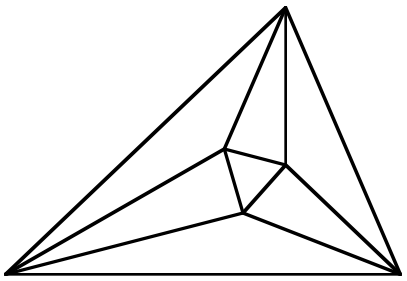
# Meet 2 - Event B 2011-2012
# Answers



Questions are worth 2-2-2-4-4 points respectively.
Remember your units.

$2.05\times10^{-4}$ 1. $0.000205 = 2.05\times10^{-4}$

9 2. $\frac{1}{3} = 3^{-1}$ and $1 = 3^0$, so $3^{-1}$, $3^0$, $3^1$, $3^2$

$-2, 3$ 3.
$$\begin{array}{r} 2x-1=5 \\ +1\ \ +1 \\ \hline 2x=6 \\ x=3 \end{array} \quad \text{or} \quad \begin{array}{r} 2x-1=-5 \\ +1\ \ +1 \\ \hline 2x=-4 \\ x=-2 \end{array}$$

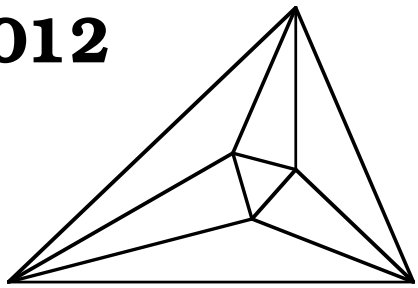
$0, -4$ 4.
$$\begin{array}{r} 10-3|x+2|=\ \ 4 \\ -10\qquad\quad -10 \\ \hline -3|x+2|=-6 \\ -3\qquad -3 \\ |x+2|=2 \end{array} \qquad \begin{array}{r} x+2=2 \\ -2\ \ -2 \\ \hline x=0 \end{array} \quad \text{or} \quad \begin{array}{r} x+2=-2 \\ -2\ \ -2 \\ \hline x=-4 \end{array}$$

$\frac{2}{3}$ 5. When the distance from the center point equals 0:
$|3x-2|=0, 3x-2=0, 3x=2, x=2/3$

OR $3x-2=4, 3x=6, x=2$ or $3x-2=^-4, 3x=^-2, x=-2/3$

$$\frac{2+\frac{-2}{3}}{2} = \frac{\frac{4}{3}}{2} = \frac{4}{3}\bullet\frac{1}{2} = \frac{2}{3}$$

# Meet 2 - Team Event 2011-2012



Questions are worth 4 points each.
Remember your units.

## NO CALCULATORS ALLOWED

_____1. $2^3 \bullet 4^{-1} \bullet 8^{-2} \bullet 16^2 \bullet 32^{-1} = ?$
Answer as a ratio of relatively prime numbers with no exponents.

_____2. What coordinate is 5/8 of the way from 20 to 36?

_____3. What number is next? 1, 1, 2, 3, 5, 8, 13, __

_____4. In the sequence $3^1, 3^2, 3^3, 3^4, 3^5, 3^6, \ldots$, the value of the sixth term is 729.
What is the one's digit in the value of the 149th term?

_____5. What number is next? 24352, 24461, 24570, _____

_____6. Solve for $x$: $|3x| - 5 = 7$.

_____7. How far is it from mile marker 120.8 to mile marker 244.5 on Highway 10?

_____8. Solve for $x$: $3(x-2) = 8x - 2(x+4)$.

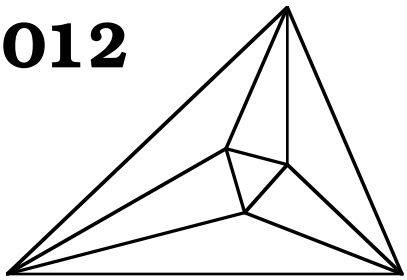
_____9. Solve for $x$: $5 - (x-4) = 3x - 7$.

_____10. $\frac{87!}{89!} = ?$

 School_____

# Meet 2 - Team Event 2011-2012

# Answers



Questions are worth 4 points each.
Remember your units.

$\frac{1}{4}$ 1. $2^3 \bullet (2^2)^{-1} \bullet (2^3)^{-2} \bullet (2^4)^2 \bullet (2^5)^{-1} = 2^3 \bullet 2^{-2} \bullet 2^{-6} \bullet 2^8 \bullet 2^{-5} = 2^{3-2-6+8-5} = 2^{-2} = \frac{1}{2^2}$

30 2. Total Distance $= 32 - 20 = 16, \ \frac{5}{8} \bullet 16 = 10,$ so $20 + 10 = 30$

Or take three midpoints: $\frac{20+36}{2} = 28, \ \frac{28+36}{2} = 32, \ \frac{28+32}{2} = 30$

21 3. $8 + 13 = 21$ This is the famous Fibonacci Sequence.

3 4. 3, 9, 27, 81, 243, 729, 2187, ... The one's digit repeats every 4 terms
149/4=37 with remainder 1, so $3, 3^5,$ and $3^{149}$ all end in 3.
(See Meet 2 Team Event 7, 2009-2010.)

24679 5. Add 109 to get the next term.

$-4, 4$ 6. $|3x| - 5 = 7, \ |3x| = 12, 3x = 12, x = 4,$ or $3x = -12, x = -4$

123.7 miles 7. $244.5 - 120.8 = 123.7$

$\frac{2}{3}$ 8. $3x - 6 = 8x - 2x - 8, 3x - 6 = 6x - 8, -6 = 3x - 8, 2 = 3x, x = \frac{2}{3}$

4 9. $5 - x + 4 = 3x - 7, 9 - x = 3x - 7, \ 9 = 4x - 7, 16 = 4x, x = 4$

$\frac{1}{7832}$ 10. $\frac{87!}{89!} = \frac{1}{88 \bullet 89} = \frac{1}{7832}$