

Questions are worth 2-2-2-4-4 points respectively. *No calculators allowed*

Meet 2 – Event A

- _1. How many integers are between (not including) -13 and 5 on the number line?
- ft 2. A rectangular field is 65 feet wide and has an area of 1,560 square feet. What is the length, in feet, of the field?

3. A parallelogram is shown on the coordinate grid. What is the ordered pair of the unmarked vertex?



<u>min</u> **4.** Jan and Kim are meeting at a movie theater that is 18 miles away from each of them. Jan drives at an average rate of 54 miles per hour. Kim drives at an average rate of 45 miles per hour. They both leave for the movie theater at the same time. How many minutes does Jan have to wait for Kim to arrive at the movie theater?

n = ____**5.** Solve for *n*.
$$\frac{7}{2} = \frac{9}{2} = \frac{8}{2}$$

$$\frac{1}{13} - \frac{1}{17} = \frac{1}{17} - \frac{1}{13}$$

п



Meet 2 – Event A 2019-20

Answers

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



<u>24 ft</u> **2.** $65 \times L = 1560; L = 1560/65 =$ **24**

(15, 18) **3.** Each axis is increasing in increments of 3.

<u>4 min</u> <u>4</u>. Jan (*d* = *rt*): 18 = 54*t* → *t* = 18/54 = 1/3 hour × 60 minutes = 20 minutes Kim (*d* = *rt*): 18 = 45*t* → *t* = 18/45 = 2/5 hour × 60 minutes = 24 minutes 24 - 20 = 4

$$\underbrace{n=6}_{2=1} 5. \quad \frac{7}{13} - \frac{9}{17} = \frac{8}{17} - \frac{n}{13}; \quad \frac{7(17)}{13(17)} - \frac{9(13)}{17(13)} = \frac{8(13)}{17(13)} - \frac{17n}{13(17)} \\ \frac{119}{221} - \frac{117}{221} = \frac{104}{221} - \frac{17n}{221}; \quad \frac{2}{221} = \frac{104 - 17n}{221} \\ 2 = 104 - 17n; \quad -102 = -17n; \quad \mathbf{6} = n$$

Meet 2 – Event B 2019-20

Questions are worth 2-2-2-4-4 points respectively. *No calculators allowed*



- **1.** Which equation has the same solution as 4(x + 3) = 20? Write the letter.
 - **A.** 7x 1 = 10
 - **B.** 40 = 6x + 12
 - **C.** 12 = 3(x + 2)
 - **D.** 5(x-2) = 15
- _2. Pablo grows tomatoes and cucumbers in his garden. Last summer, the ratio of tomatoes to cucumbers was 14:3. He grew 84 tomatoes. How many cucumbers did Pablo grow?
- **_3.** The points (2, 7), (4, 2), and (-1, 0) are three of the four vertices of a square. What is the ordered pair of the remaining vertex?
- <u>ft</u>² **4.** Lana is painting her bedroom wall. She spends 3 hours preparing the wall. She paints 5 square feet of the wall every 15 minutes. Including her preparation time, it takes Lana 5 hours and 45 minutes to paint the wall. What is the area, in square feet, of the wall Lana paints?
 - 5. In the prime factorization of 37!, how many times does the factor 5 occur?

Meet 2 – Event B 2019-20



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

<u>C</u> 1. 4(x+3) = 20; x+3 = 5; x = 212 = 3(x+2); 4 = x+2; x = 2

18 **2.**
$$\frac{14 \text{ T}}{3 \text{ C}} = \frac{84 \text{ T}}{x \text{ C}}$$
; $14x = 3(84)$; $14x = 252$; $x = 18$

(-3, 5) **3.** .

55 ft² 4. 5 ft² per 15 minutes = <u>1 ft² per 3 minutes</u> 5 hours + 45 minutes = 345 minutes of prep and painting 345 minutes of prep and painting – 3 hours prep = <u>165 minutes of painting</u> $\frac{1 \text{ ft}^2}{3 \text{ min}} = \frac{x \text{ ft}^2}{165 \text{ min}}; \quad 165 = 3x; \quad x = 55$

8 5. $37! = 37 \cdot 36 \cdot 35 \cdot 34 \cdot 33 \cdot 32 \cdot 31 \cdot 30 \cdot ...$ Only the values ending in 5 or 0 include 5 as a prime factor: 35, 30, 25, 20, 15, 10, 5. The prime factorization of these values yields: $(\underline{5} \cdot 7), (\underline{5} \cdot 3 \cdot 2), (\underline{5} \cdot \underline{5}), (\underline{5} \cdot 2 \cdot 2), (\underline{5} \cdot 3), (\underline{5} \cdot 2), (\underline{5} \cdot 1)$ There are **8** instances of the factor 5 among these values.

©2019 by the Minnesota Junior High School Mathematics League

Meet 2 – Team Event 2019-20

Questions are worth 4 points each. *No calculators allowed*



- **1.** How many positive integers are less than 90 and divisors of 360?
- in square inches, of the shaded region?
 - **3.** Write $\frac{5}{33}$ in decimal form.



- **___4.** What is the greatest two-digit prime made up of 2 prime digits?
- <u>cm</u> 5. The area of a circle is 289π square centimeters. What is the circumference of the circle? Write your answer in terms of π .
 - **___6.** There are 3 diving boards at a pool: Board A, Board B, and Board C. The ratio of the height of Board A to that of Board B is 2:1. The ratio of the height of Board B to that of Board C is 4:5. What is the ratio of the height of Board A to that of Board C?
 - **7.** The ordered pairs (-6, 5) and (10, 5) represent two vertices of an isosceles right triangle. Name one ordered pair that could represent the third vertex of this isosceles right triangle.
 - **8.** What is the smallest positive integer that is a multiple of 2, 1 more than a multiple of 5, and 2 more than a multiple of 13?
 - <u>m</u>²**9.** A shape is shown. What is the area, in square meters, of the shape?



in **10.** Gabe has a rectangular posterboard that is 22 inches wide and 34 inches long. He cuts identical isosceles right triangles off each corner of the posterboard so the area of the remaining posterboard is 600 square inches. What is the length, in inches, of each leg of each triangle? Write your answer in radical form.

Meet 2 – Team Event 2019-20

Answers

Questions are worth 4 points each.



| <u> 20 </u> 1. | Consider the factor pairs of 360: <u>1</u> ×360, <u>2</u> ×180, <u>3</u> ×120, <u>4</u> ×90, <u>5×72, 6×60, 8×45, 9×40, 10×36, 12×30, 15×24, 18×20</u> 20 of the factors are less than 90 |
|---|---|
| <u>432 in²</u> 2. | Base of shaded triangle = $58 - 26 = 32$; Height of shaded triangle = 27 $\frac{1}{2}(32)(27) = 432$ |
| 0. <u>15</u> 3. | Perform long division for $5 \div 33$. |
| <u> </u> | The only prime single-digit numbers are 1, 2, 3, 5, and 7. The greatest number made of two prime digits is 77, however 77 is not prime. |
| <u>34π cm</u> 5 . | The next greatest is 75, however 75 is not prime. Then we get to 73 , which IS prime. $A = \pi r^2$; $289\pi = \pi r^2$; $289 = r^2$; $r = 17$ $C = 2\pi r = 2(\pi)(17) = 34\pi$ |
| <u>8:5</u> 6. | $\frac{A}{B} = \frac{2}{1}; A = 2B; B = \frac{A}{2} \qquad \frac{B}{C} = \frac{4}{5}; 5B = 4C; B = \frac{4C}{5} \qquad \frac{A}{2} = \frac{4C}{5}; 5A = 8C; \frac{A}{C} = \frac{8}{5}$ |
| See right7. | The student writes any of the following ordered pairs: (-6, -11), (10, -11), (-6, 21), (10, 21), (2, -3), or (2, 13) |
| 1068. | Being 2 more than a multiple of 13 is the most limiting requirement, so start there. The smallest multiple of 13 is 13, and $13 + 2 = 15$. However, 15 does not satisfy the other criteria. Then move on to the next multiples of 13. Skip odd multiples of 13, because adding 2 to those yields an odd number, which is not be a multiple of 2. Working your way up through the even multiples of 13 (13×2 , 13×4 , 13×6 , etc.), you will eventually hit $13 \times 8 = 104$. $104 + 2 = 106$. 106 is 1 more than a multiple of 5 and is a multiple of 2. |
| 277.5 m ² 9 . Also accept: 277½ | Partition the figure into a rectangle, a right trapezoid, and a triangle and add the areas of the sections together. |
| 10 | • Area of full posterboard = $22(34) = 748$. Area of all 4 triangles = $748 - 600 = 148$. |

Area of 1 triangle = 148/4 = 37. This means $\frac{1}{2}x^2 = 37 \rightarrow x^2 = 74 \rightarrow x = \sqrt{74}$.