

WISCONSIN MIDDLE SCHOOL STATE MATHEMATICS MEET
WISCONSIN MATHEMATICS COUNCIL

March 6 – 10, 2017

Problem Set #1

Score:
(For Scorer's Use Only)

Name: _____

Team: _____

[Reduce all common fractions. Decimal approximations are **not** accepted unless specifically asked for. When allowed, round decimal approximations to **3** decimal places. **No rounding should be done except on the final answer.**]

For this first problem set, calculators are not allowed. They may be used for the remainder of the meet only, starting with Problem Set #2.

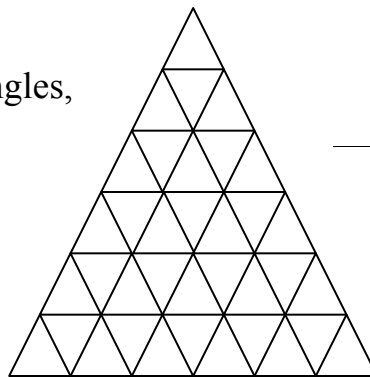
Answers

1. (1 point)

Suppose that $a \text{ 🍏 } b$ means $a + a - b$. For example,
 $3 \text{ 🍏 } 4$ means $3 + 3 - 4$. If $4 \text{ 🍏 } 5$ and $6 \text{ 🍏 } \square$ represent
the same number, what is the value of \square ? _____

2. (3 points)

What is the total number of triangles,
of any size, that point up? _____



3. (5 points)

In parallelogram $MATH$, $MA = 3xy^3$ mm,
 $AT = 15x + 3$ mm, $TH = 168$ mm, and
 $MH = 108$ mm. What is the numerical value of y^x ? _____

WISCONSIN MIDDLE SCHOOL STATE MATHEMATICS MEET
WISCONSIN MATHEMATICS COUNCIL

March 6 – 10, 2017

Problem Set #2

Score: _____
 (For Scorer's Use Only)

Name: _____

Team: _____

[Reduce all common fractions. Decimal approximations are **not** accepted unless specifically asked for. When allowed, round decimal approximations to **3** decimal places. **No rounding should be done except on the final answer.**]

Answers

1. (1 point)

Draw the correct number of circles in the blank to make a true statement.

$$\triangle - \square = \bigcirc \bigcirc$$

$$\bigcirc \bigcirc + \square \square \square \square \square = \triangle$$

$$\square \square = \triangle$$

$$\square = \underline{\hspace{2cm}}$$

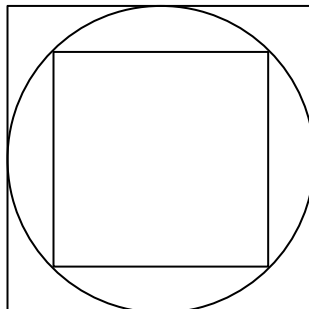
2. (3 points)

Tom takes 8 hours to paint a fence. Sara can paint the same fence in 4 hours. How long will it take them to paint the fence working together?

_____ hr _____ minutes

3. (5 points)

What is the ratio of the area of the small square to the large square?



WISCONSIN MIDDLE SCHOOL STATE MATHEMATICS MEET
WISCONSIN MATHEMATICS COUNCIL

March 6 – 10, 2017

Problem Set #3

Score:
(For Scorer's Use Only)

Name: _____

Team: _____

[Reduce all common fractions. Decimal approximations are **not** accepted unless specifically asked for. When allowed, round decimal approximations to **3** decimal places. **No rounding should be done except on the final answer.**]

Answers

1. (1 point)

A 4" by 6" picture is enlarged to 8" by 10".

By what percent did its area increase? **Round your answer to the nearest whole percent.**

2. (3 points)

In her latest game, Deb bowled 198. This raised her average from 164 to 165. To raise her average to 166 with the next game, what must she bowl?

3. (5 points)

For the number ABC, each distinct letter represents a different digit. If ABC, CAB, and BCA are all divisible by 6 and 9, find the value of $ABC + BCA + CAB$.

WISCONSIN MIDDLE SCHOOL STATE MATHEMATICS MEET
WISCONSIN MATHEMATICS COUNCIL

March 6 – 10, 2017

Problem Set #4

Score: _____
(For Scorer's Use Only)

Name: _____

Team: _____

[Reduce all common fractions. Decimal approximations are **not** accepted unless specifically asked for. When allowed, round decimal approximations to **3** decimal places. **No rounding should be done except on the final answer.**]

Answers

1. (1 point)

Set A has 5 consecutive integers with a sum of 35.
Set B has 4 consecutive integers with a sum of 34.
How many integers are in both set A and set B?

2. (3 points)

A couple has 3 children, all boys. They plan to have 2 more children. What is the probability that they will have at least one girl, given that it is equally likely that a child will be of either sex?

3. (5 points)

The product of two numbers is 20. When 1 is subtracted from each number, the new product is 13. What is the sum of these two numbers?

WISCONSIN MIDDLE SCHOOL STATE MATHEMATICS MEET
WISCONSIN MATHEMATICS COUNCIL

March 6 – 10, 2017

Team Problem Set (Page 1)

Score:
(For Scorer's Use Only)

Name: _____

Captain: _____

[Reduce all common fractions. Decimal approximations are **not** accepted unless specifically asked for. When allowed, round decimal approximations to **3** decimal places. **No rounding should be done except on the final answer.**]

Answers

1. (10 points)

Label the vertices of a cube with the eight integers -2010, -2011, -2012, -2013, 2014, 2015, 2016, and 2017 in any manner. Next, label each edge with the sum of its vertices. Finally, label each face with the sum of its edges. What is the sum of the six faces?

2. (10 points)

Five points are randomly positioned within a circle of radius 1 unit. Find the probability that at least 2 of these points lie within 1.5 units of each other.

3. (10 points)

What are the 3 distinct sets of 3 positive integers that have a mean of 6, a median of 7, and no mode?

Team Problem Set (Page 2)

4. (10 points)

Gonzo spent \$20 on stamps. Some were 35 cent stamps. There were three times as many 20 cent stamps as 35 cent stamps. The rest were 50 cent stamps. If he bought fewer than 80 stamps, how many stamps did he buy?

5. (10 points)

Ten darts were thrown at a dartboard with sections worth 1, 3, or 5 points. Not all of the darts hit the board, however. If the thrower got exactly 37 points, what is the greatest number of darts that might have missed the board?

6. (10 points)

In a magic triangle, each of the six whole numbers 20-25 are placed in one of the circles so that the sum, S , of the three numbers on each side of the triangle is the same. Determine the largest possible value for S . Write your answer inside the central triangle.

