

7th/8th grade Math Meet '12

Name:_____ School Team:_____

Event 1: Problem Solving (no calculators)

Part 1: Computation (2 pts. each)

1) $\frac{1}{2} + \frac{1}{x} + \frac{3}{10} = 1$ $X = 5$

2) 20% of 15 = x % of 12 $X = 25$

3) $100 - x = (2)(3)(4) + 36$ $X = 40$

4) $0.36 \div x = 4.0$ $X = 0.09$

5) $18/42 = x/35$ $X = 15$

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Event 1: Problem Solving (no calculators)

Part 2: Problems Involving Order of Operations (2 pts. each)

Use the order of operations to evaluate each problem.

1) $3 - 2 + 3 \cdot 3 - \sqrt{9}$

7

2) $3 + 8 \div 4 - 0/5 + \sqrt{16}$

9

3) $\frac{9 + 7 - 2(3)}{3 + 2}$

2

4) $36 - 6^2 \div 9 - 2$

30

5) $3(2^2 + 1) - 30 \div 3$

5

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Event 2: Conversions. (with calculators)
(5 points each)

12 inches = 1 foot

3 feet = 1 yard

1 mile = 5280 feet

3 teaspoons (t) = 1 Tablespoon (T)

8 ounces (oz) = 1 cup (c)

2 cups (c) = 1 pint (pt)

2 pints (pt) = 1 quart (qt)

2 tablespoons (T) = 1 ounce (oz)

4 quarts (qt) = 1 gallon (gal)

Perform the following conversions, using the unit ratios. When necessary, round answers to the nearest hundredth.

1) How many inches are in $2\frac{1}{3}$ yards?

84 inches

2) How many cups are in 4 quarts?

16 cups

3) How many ounces are in 6 pints?

96 ounces

4) How many yards are in 3 miles?

5280 yards

5) How many teaspoons are in $1\frac{1}{2}$ cups?

72 teaspoons

Name: _____ School Team: _____

Event 3: Problem Solving (with calculators)

Part 1: Adding and Subtracting Mixed Numbers. (3 points each)

Add or Subtract.

Write answers as mixed numbers in reduced form. No decimal answers!

1) $1\frac{5}{8} + 2\frac{1}{2}$

$$= 4\frac{1}{8}$$

2) $\frac{1}{6} + \frac{1}{2} + \frac{2}{3}$

$$= 1\frac{1}{3}$$

3) $\frac{9}{16} - \frac{3}{8}$

$$= \frac{3}{16}$$

4) $9\frac{1}{4} - 4\frac{5}{16}$

$$= 4\frac{15}{16}$$

5) $9\frac{1}{32} - 3\frac{3}{8}$

$$= 5\frac{21}{32}$$

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Event 3: Problem Solving (with calculators)

Part 2: Multiplying and Dividing Mixed Numbers (4 points each)

Multiply or Divide.

Write answers as mixed numbers in reduced form. No decimal answers!

1) $\left(\frac{1}{2}\right)\left(7\frac{1}{3}\right)$

$$= 3\frac{2}{3}$$

2) $\left(9\frac{1}{2}\right)\left(3\frac{4}{5}\right)$

$$= 36\frac{1}{10}$$

3) $\left(3\frac{3}{4}\right) \div \left(1\frac{1}{2}\right)$

$$= 2\frac{1}{2}$$

4) $\left(5\frac{5}{6}\right) \div \left(1\frac{1}{14}\right)$

$$= 5\frac{4}{9}$$

5) $\left(3\frac{1}{4}\right)^2$

$$= 10\frac{9}{16}$$

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Event 4: Mental Math (no calculators)

Each answer is worth 2 pt each.

1) 50

6) 5

2) 58

7) 1

3) 24

8) 36

4) 9/20

9) 2

5) 4

10) 10

Event 5: Team Problems (with calculators)

Area, Perimeter, Circumference, Surface Area and Volume Formulas

b = base of the polygon
 h = height of the polygon
 b_1 = the first base
 b_2 = the second base
 r = radius

Area (A)		Perimeter (P) and Circumference (C)
Square	$A = (b)(h)$	P = the sum of the sides of the polygon
Rectangle	$A = (b)(h)$	
Parallelogram	$A = (b)(h)$	$C = 2r\pi$
Trapezoid	$A = \frac{1}{2} h (b_1 + b_2)$	
Circle	$A = \pi r^2$	

Surface Area (SA)		Volume (V)
<p>p = perimeter h = height of figure s = slant height of figure B = AREA of the base of the figure</p>		
Examples of figures:		
Prism	$SA = ph + 2B$	$V = Bh$
Cylinder	$SA = Ch + 2B$	$V = Bh$
Pyramid	$SA = \pi rs + B$	$V = \frac{1}{3} Bh$
Cone	$SA = \pi rs + B$	$V = \frac{1}{3} Bh$
Sphere	$SA = 4\pi r^2$	$V = \frac{4}{3} \pi r^3$

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Event 5: Team Problems (with calculators)

Problem 1: Area & Perimeter Problems involving Polygons
(5 points each) LABEL YOUR ANSWERS! You must use $\pi = 3.14$

- 1) An illuminated sign in the main entrance of a hospital is a parallelogram with a base of 56 in. and an adjacent side of 42 in. How many inches of aluminum molding are needed to frame the sign?

196 inches

- 2) The square parking lot of a doctor's office is to have curbs built on all four sides. If the lot is 160 ft on each side, how many feet of curb are needed? Allow 12 ft for a driveway into the parking lot.

628 feet

- 3) The six glass panes in a kitchen light fixture each measure $4\frac{1}{2}$ in. along the top and 10 in. along the bottom. The top and bottom are parallel. The height of each pane is 8 in. What is the combined area of the six trapezoidal panes?

348 square inches

- 4) Tiles that are 6 in. x 6 in. cover the floor of a shower. How many whole tiles are needed for the floor if the shower measures 4.5 ft by 6 ft?

108 tiles

- 5) Madison Duke is wallpapering the walls of a laundry room 8 ft by 8 ft by 8 ft high. How many square feet of paper will she need if there are 63 square feet of openings in the room?

193 square feet

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Event 5: Team Problems (with calculators)

Problem 2: Area & Circumference Problems involving Circles.
(5 points each) LABEL YOUR ANSWERS! You must use $\pi = 3.14$

- 1) Find to the nearest inch the circumference of a circle with a radius of 1 ft 9 in.

132 inches

- 2) Find the area to the nearest square inch of the top of a circular tank with a diameter of 12 ft 8 in.

18,137 square inches

- 3) A 15-in. diameter wheel has a 3-in. hole in the center. Find the area of a side of the wheel to the nearest tenth.

169.6 square inches

- 4) Sam has a circular pool with a diameter of 30 feet. There is a 3 foot wide walkway that goes around the pool. How much fencing is needed to go around the walkway? Round answer to the nearest tenth.

113.0 feet

- 5) A swimming pool is circular with a diameter of 30 feet. There is a 5 foot wide walkway surrounding the pool. What is the area of the walkway? Round to the nearest tenth.

549.5 square feet

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Event 5: Team Problems (with calculators)

Problem 3: Surface Area Application Problems.

(5 points each) LABEL YOUR ANSWERS! You must use $\pi = 3.14$

- 1) How many square inches are in the total surface area of an aluminum box with a $2\frac{1}{2}$ in. length, $4\frac{3}{4}$ in. height, and 3 in. width? Round to the nearest hundredth.

67.25 square inches

- 2) How many square centimeters of sheet metal are needed to form a conical rain cap 25 cm in diameter if the slant height is 15 cm? Round to the nearest hundredth.

1079.38 square centimeters

- 3) What is the total surface area of a cylindrical oil storage tank that has a 40-ft diameter and 15-ft height?

4396 square feet

- 4) How many square feet of steel are needed to manufacture a spherical water tank with a diameter of 45 ft? Round to the nearest tenth.

6358.5 square feet

- 5) Find the total surface area of a conical tank that has a radius of 15 ft and a slant height of 20 ft. Round to the nearest tenth.

1648.5 square feet

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Event 5: Team Problems (with calculators)

Problem 4: Application Problems involving Volume.

(5 pts. each) LABEL YOUR ANSWERS! You must use $\pi = 3.14$

- 1) What is the volume of a cylindrical oil storage tank that has a 40-ft diameter and 15-ft height? Round to the nearest whole number.

18,840 cubic feet

- 2) How many cubic feet are in a conical pile of sand that is 30 ft in diameter and is 20 ft high?

4710 cubic feet

- 3) A cone-shaped storage container holds a photographic chemical. If the container is 80 cm wide and 30 cm high, how many liters of the chemical does it hold if 1 L = 1,000 cm³? Round to nearest whole liter.

50 liters

- 4) Find the volume of a pyramid that has a square base of 48 m on a side and a height of 100 m.

76,800 cubic meters

- 5) If 1 ft³ = 7.48 gal, how many gallons can a spherical water tank hold if its diameter is 45 ft? Round to nearest whole gallon.

6,376 gallons