1. [5 pts -	1 each] Circle the	most reasonable mea	surement for each	attribute.
(a) The	e weight of a butte	erfly:		
	5 g	500 g	5kg	$500 \ kg$
(b) The	e temperature in a	properly working rel	frigerator:	
	$-50^{o}C$	$-5^{o}C$	$5^{o}C$	$50^{o}C$
(c) The	e height of Old Ma	ain:		
	$30\ mm$	30 cm	30 m	$30 \ km$
(d) The	e volume of your b	ackpack/book bag:		
	$7m\ell$	$70m\ell$	7ℓ	70ℓ
(e) The	e width of this pag	ge from left to right:		
	$2.1 \ mm$	21 mm	2.1 cm	21 cm

2. [5 pts] Convert 57.9 dam^3 to km^3 ; do not round.

3. [8 pts] Convert 52.83 square kilometers per hour to minutes per square mile, given that 1.6 km equals 1 mile. Round to the nearest hundredth.

4. (a) [10 pts] A circular cylinder has a height of 24 cm. The diameter of top and bottom is 10 cm. Find its surface area to the nearest tenth, showing clear work.

(b) /2 pts/ Draw a net for the cylinder.

- (c) [2 pts] How many lateral planes of symmetry does it have?
- (d) /2 pts/ How many lateral axes of symmetry does it have?

5. [10 pts] The horizontal and vertical distance between adjacent dots in this grid is 1 cm. Find the area of the given shape, to the nearest tenth. Show clear work.



6. [8 pts] A right triangle is oriented so that it sits on its hypotenuse; i.e., the hypotenuse is horizontal, as shown. If the legs are 16.8 inches and 7.1 inches long, respectively, what is the height h of the triangle to the nearest tenth? Show clear work.



- 7. [6 pts 2 each] Consider the diagram on the board. Use correct notation to name each of the following.
 - (a) $\angle DIE \cap \angle HID$
 - (b) $\overline{IJ} \cup \overrightarrow{IG}$
 - (c) $\overrightarrow{GJ} \cap \angle BIG$

8. [8 pts] In the diagram on the board, $m(\angle DIE) = 20^{\circ}$, $m(\angle DEI) = 105^{\circ}$, and $m(\angle HPI) = 80^{\circ}$. Find the measure of $\angle PHI$, explaining your reasoning verbally.

- 9. [20 pts 2 per characteristic] Draw examples of the following; mark all significant features.
 - (a) a quadrilateral that is equilateral but not regular

(b) a concave hexagon and one of its diagonals

(c) an obtuse angle and its vertex

(d) a line segment and its perpendicular bisector

(e) a pair of alternate exterior angles

10. [6 pts] How many degrees is the non-reflex angle formed by the hands of a working clock at 11:15? Show work.

11. [6 pts] Is it possible for a convex polygon to have an interior angle total of 53100° ? Justify your response.

- 12. [4 pts 1 each] Classify each statement below as always, sometimes, or never true.
 - (a) A kite is a quadrilateral.

$always\ true$	sometimes true	never true						
(b) A square is equiangular.								
$always\ true$	sometimes true	never true						
(c) A rhombus is a trapezoid.								
$always\ true$	sometimes true	never true						

(d) An isosceles triangle is obtuse.

always true sometimes true never true

13. [10 pts] If point F = (0, -2) and G = (-3, 5), find the coordinates of a pair of points, P and Q, so that P, Q, F, and G are the vertices of a square. Show work as needed.

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14. [6 pts] $\triangle CAT \sim \triangle BUG$ with AC = 4, AT = 8, BG = 15, and BU = 10. Find the length of CT, to the nearest tenth.

15. [10 pts] Two objects are similar. Every length in the larger object is 5.2 times that of the smaller one. If the volume of the larger object is 872.4 m^3 , find the volume of the smaller one, to the nearest tenth. Show clear work.

16. [8 pts] In the figure below, assume only that \overline{AB} and \overline{FE} are congruent and parallel. Find a pair of congruent triangles, using correct notation $\triangle _ \cong \triangle _$, then explain your reasoning for the congruence acronym you used.



- 17. (a) [2 pts] What is the smallest number of degrees a regular nonagon must be rotated to demonstrate symmetry?
 - (b) [2 pts] Beginning with a printed capital letter "A," create a figure that has exactly two lines of symmetry.

(c) [2 pts] Draw a figure that has reflectional symmetry, but no other kind of symmetry.

- (d) [2 pts] If a prism has an isosceles trapezoid for a base, how many axes of symmetry does the prism have altogether?
- (e) [2 pts] Name a three-dimensional object that has one longitudinal axis of symmetry and 5 longitudinal planes of symmetry.
- 18. [4 pts] Given these views of a three-dimensional block structure, tell how tall each portion of the structure is by writing the heights in the top view positions.

Top View





Side View

