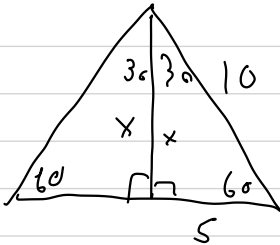
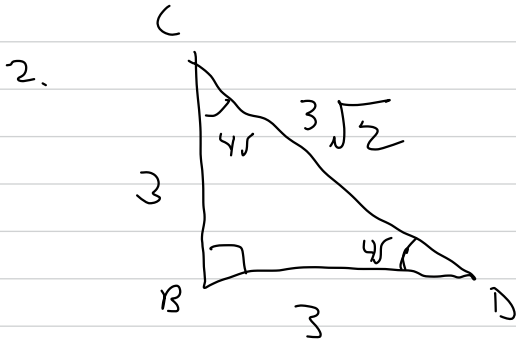


Geometry Test 2 Solns

ps ①

1. SSS all 3 sides equal
- SAS two sides and the angle between equal
- AAS two angles and a side equal.



$$5^2 + x^2 = 10^2$$

$$25 + x^2 = 100$$

$$x^2 = 75$$

$$x = \sqrt{75} = 5\sqrt{3}$$

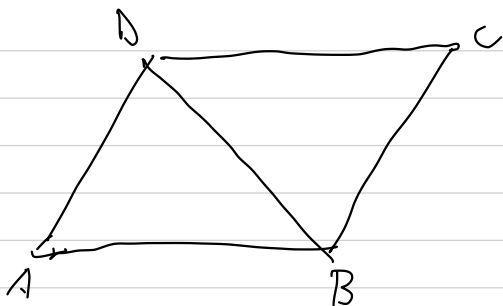
$$\text{base} = 10 \quad \text{height} = 5\sqrt{3}$$

$$\text{Area} = \frac{1}{2} \text{base} \times \text{height} = \frac{1}{2} 10 \cdot 5\sqrt{3} = \boxed{25\sqrt{3}}$$

Geometry Test 2 Solns

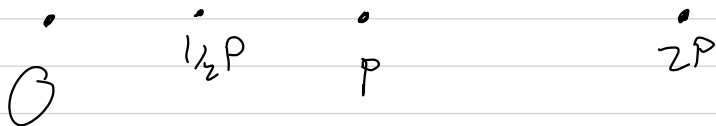
ps 2

4.



- $\angle A = \angle C$ because opposite angles of a parallelogram are equal
 - The triangles share the side DB
 - $\angle ADB = \angle CBD$ because opposite angles of parallel lines have same measure
- \therefore By AAS the triangles $\triangle ADB$ and $\triangle CBD$ are congruent

5.



Geometry Test 2 Solns

ps(3)

6. Triangles are similar iff a dilation of one is congruent to the other.

7. a) If all angles are equal

b) If corresponding sides have the same ratio for all sides.

8. The smaller triangle is $\frac{1}{3}$ the size of the bigger

a) So $|GH|$ is $\frac{1}{3}$ of $|DF| = 8$

$$\text{that is } |GH| = \frac{1}{3} \cdot 8 = \frac{8}{3}$$

b) $\triangle EGH$ is similar to $\triangle EDF$

c) Because their corresponding angles are equal
i) They share $\angle E$

ii) $m\angle EGH = m\angle EDF$ because corresponding sides of a line intersecting parallel lines \overline{GH} , \overline{DF}

iii) $m\angle EHG = m\angle EFD$ because corresponding sides of a line intersecting parallel lines \overline{GH} , \overline{DF}

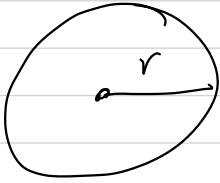
9. Dilation by a factor of r multiplies each coordinate by r .

10. Angles are unchanged by dilation

Geometry Test 2 Solns

pg 4

11.



$$A = \frac{\pi r^2}{\pi} = \frac{36\pi}{\pi}$$

$$r^2 = 36$$

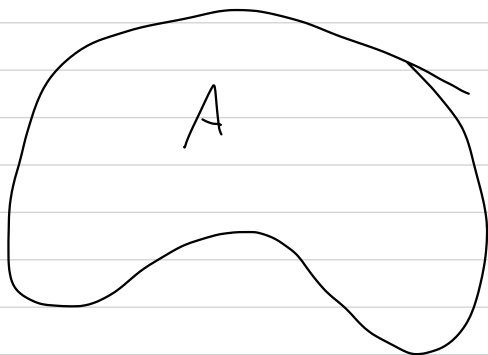
$$r = 6$$

$$\text{Circumference} = 2\pi r$$

$$= 2\pi \cdot 6$$

$$= \boxed{12\pi}$$

12.



Area is 16

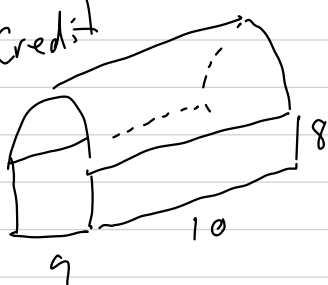
$D_3(A)$ dilation by 3

Area is $3^2 \cdot A$

$$= 9 \cdot 16$$

$$= 144$$

13. Extra Credit



$$\begin{aligned} \text{a) Roof area} &= \left(\frac{1}{2} \text{circum of diameter-9 circle} \right) \times 10 \\ &= 4.5\pi \cdot 10 = \boxed{45\pi} \end{aligned}$$

$$\begin{aligned} \text{b) 4 sides area} &= 9 \times 8 + 10 \times 8 + 9 \times 8 + 10 \times 8 \\ &= 144 + 160 = 304 \\ \text{4 sides + Roof} &= \boxed{304 + 45\pi} \end{aligned}$$