#	A	B	C	D
1.	26	104	480	240/13
2.	15	$\left(\frac{1}{2},18\right)$	4/3	$(-1,16)$
3.	16	96	7	42
4.	7	$4\sqrt{3}$	$2\sqrt{21}$	$28\sqrt{3}$
5.	32	$8\sqrt{11}$	$\frac{16\sqrt{11}}{5}$	$\frac{43}{45}$
6.	trapezoid	90	60	120
7.	12	48π	12π	$72\pi\sqrt{3}$
8.	ΔPQR (letters in this order only)	12	35/2	14
9.	6	-9	1	42
10.	0	$(3,3\sqrt{3})$	$y=\sqrt{3}x$	54π
11.	12	ΔVTQ (letters in this order only)	4	144
12.	64	rectangle	$12\sqrt{3}$	5
13.	isosceles	$\angle CBF$ (or $\angle CBG$)	8	27
14.	$\angle 3 \cong \angle 6$	$\angle 1 \cong \angle 4$	$\overline{BD} \cong \overline{FD}$	$\angle 2 \cong \angle 5$

1. Diagonal forms 4 rt triangles with legs 24 and 10, so the hypotenuse is 26 which is a side.
A: 26 **B:** p = 4(26) = 104

C: $A=\frac{d_1d_2}{2}=\frac{48\cdot 20}{2}=480$

D: $h=\frac{A}{b}=\frac{480}{26}=\frac{240}{13}$

2. **A:** PQ = $\sqrt{9^2+12^2}=15$

B: $\left(\frac{-4+5}{2},\frac{12+24}{2}\right)=\left(\frac{1}{2},18\right)$ **C:** $\frac{12-24}{-4-5}=\frac{4}{3}$

D: $\left(-4+\frac{5-(-4)}{3},12+\frac{24-12}{3}\right)=(-1,16)$

3. **A:** $\sqrt{20^2-12^2}=16$ **B:** $\frac{1}{2}\cdot 12\cdot 16=96$

C: Let DB = x. $12^2+(16-x)^2=(x+8)^2 \rightarrow$
$144+256-32x=16x+64 \rightarrow x=7$ **D:**
$\frac{1}{2}\cdot 12\cdot 7=42$

4. **A:** $2r=6+8=14; r=7$

B: $\frac{6}{AB}=\frac{AB}{8}\rightarrow AB^2=48\rightarrow AB=4\sqrt{3}$

C: $\sqrt{6^2+\left(4\sqrt{3}\right)^2}=\sqrt{84}=2\sqrt{21}$

D: $\frac{1}{2}\cdot 14\cdot 4\sqrt{3}=28\sqrt{3}$

5. **A:** The third side is 5 + 12 - 2 or 15. So the perimeter is 5 + 12 + 15 = 32
B: $s=16.$ $A=\sqrt{16\cdot 4\cdot 1\cdot 11}=8\sqrt{11}$
C: The longest altitude is drawn to the shortest side. $h=\frac{16\sqrt{11}}{5}$
D: The smallest angle is opposite the shortest side. Use the Law of Cosines.
$5^2=12^2+15^2-2\cdot 12\cdot 15\cos\theta \rightarrow \cos\theta=\frac{43}{45}$

6. $2x+3x-15+x+15+4x-90=360 \rightarrow$
$10x-90=360\rightarrow x=45$ $m\angle P=2(45)=90;$
$m\angle Q=3\cdot 45-15=120; m\angle R=45+15=60;$
$m\angle S=4\cdot 45-90=90$
A: Angles P and S are consecutive right angles making segments PQ and SR parallel. The quadrilateral is a trapezoid. See above work for B, C and D. **B:** 90 **C:** 60 **D:** 120

7. **A:** $\frac{s^2\sqrt{3}}{4}=36\sqrt{3}\rightarrow s=12$

B: $r=\sqrt{6^2+3^2}=\sqrt{48};\pi\left(\sqrt{48}\right)^2=48\pi$

C: $r=\frac{6}{\sqrt{3}}=2\sqrt{3};\pi\left(2\sqrt{3}\right)^2=12\pi$

D: $V=\frac{1}{3}\pi\left(6^2\right)6\sqrt{3}=72\pi\sqrt{3}$

8. **A:** ΔPQR

B: $\frac{PR}{PT}=\frac{PQ}{PS}\rightarrow\frac{PR}{4}=\frac{7}{2}\rightarrow PR=14\rightarrow SR=12$

C: $\frac{PR}{QR}=\frac{PT}{ST}\rightarrow\frac{14}{QR}=\frac{4}{5}\rightarrow QR=\frac{35}{2}$

D: PR = 14 (See work for part B.)

9. **A:** isosceles because
$\overline{AB} \cong \overline{GB}$ since alt int $\angle$'s are congruent.

B: $\angle CBF$ They are corresponding angles of parallel lines.

C: $\frac{CF}{CD} = \frac{CB}{CA} \to \frac{5}{15} = \frac{CB}{12} \to CB = 4 \to AB = 8$

Since $\overline{AB} \cong \overline{BG}, BG = 8$.

D: Let *BG = x* and *BG = y*, then *BC* = 12 - *x* and *CB* = 15 - *y*. The perimeter of the triangle is (12 - *x*) + (15 - *y*) + *x* + *y* = 27.

10. **A**: The slopes are opposites so the sum is 0.
B: The base of the triangle is 6 so its altitude is $3\sqrt{3}$. Therefore, the vertex is $3\sqrt{3}$.

C: $m = \frac{3\sqrt{3} - 0}{3 - 0} = \sqrt{3}$ because the line passes through the origin and the vertex of the triangle. The equation is $y = \sqrt{3}x$.

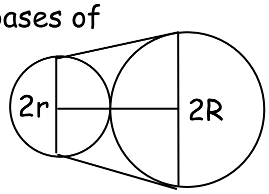
D: The solid figure is made up of 2 cones each each with a radius of 3 and a height of $3\sqrt{3}$. So $V = \frac{2}{3}\pi(3\sqrt{3})^2 \cdot 3 = 54\pi$.

11. **A**: $\sqrt{15^2 - 9^2} = 12$ **B**: ΔVTQ

C: $\frac{VQ}{PQ} = \frac{TQ}{QW} \to \frac{VQ}{12} = \frac{5}{15} \to VQ = 4$

D: $9 \cdot 16 = 144$

12. **A:** See diagram. The bases of the trapezoid are 2r and 2R. The altitude is r + R. Since r + R = 8, 2r + 2R = 16. So the area is $\frac{1}{2} \cdot 8 \cdot 16 = 64$



B: The opposite angles would be right angles and the quadrilateral must be a rectangle. (not necessarily a square)

C: $\sqrt{12^2 - 6^2} = 6\sqrt{3}; 2(6\sqrt{3}) = 12\sqrt{3}$

D: $3^2 + 4^2 + h^2 = \left(5\sqrt{2}\right)^2 \to h^2 = 25 \to h = 5$

13. **A**: $P(-1) + 3 \cdot 6 - 12 = 0 \to P = 6$

B: $-\frac{P}{3} = 3 \to P = -9$ **C**: $\frac{-P}{3} = -\frac{1}{3} \to P = 1$

D: $-P - 12 - 12 = 0 \to P = -24;$
$-1 - 4Q - 6 = 0 \to Q = -\frac{7}{4}; P \cdot Q = -24 \cdot -\frac{7}{4} = 42$

14. **A:** Since $\angle A$ is in both triangles, it is congruent to itself. The other angles not included by the congruent sides are $\angle 3 \cong \angle 6$.
B: $\angle 1 \cong \angle 4$ because the congruent sides are included by these angles and angle A.
C: The vertical angles are congruent. So $\overline{FD} \cong \overline{BD}$ so that the angle will be included.
D: $\angle 2 \cong \angle 5$ so that the side is not included between the vertical angles and these angles.