1. Solve $\frac{x-2}{3}=\frac{8}{3x}$.

$3x(x-2)=3(8)$

$3x^2-6x=24$

$x^2-2x-8=0$

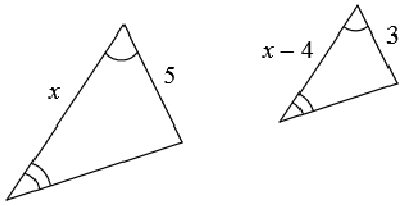
$(x-4)(x+2)=0$

$\{-2,4\}$

2. TRUE or FALSE? Sides of similar triangles are congruent. If FALSE, change the statement to make it TRUE.

False

3. The two polygons at the right are similar. Find the value of x.



$\frac{x}{x-4}=\frac{5}{3}$

$3x=5x-20$

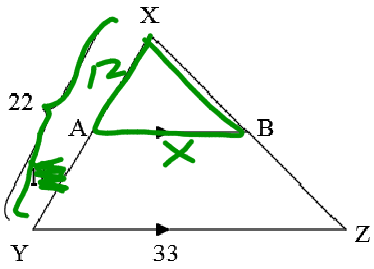
$10=x$

4. If $\Delta ABC \sim \Delta RST$, AB = 8, AC = 9, and RT = 15, find RS.

$\frac{9}{15}=\frac{8}{x}$

$x=13\frac{1}{3}$

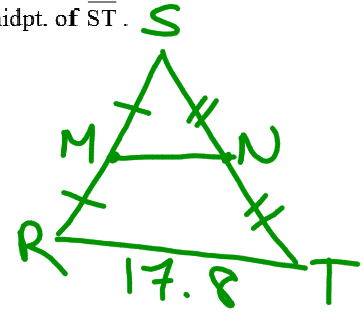
5. Find AB.



$\frac{12}{22} = \frac{x}{33}$

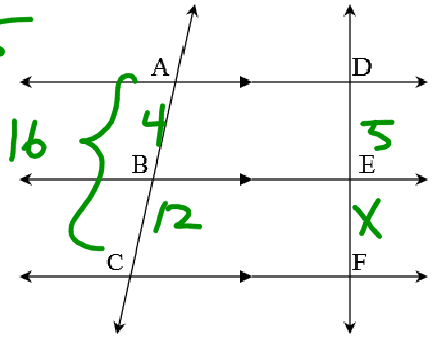
$x = 18$

6. In ΔRST, M is the midpt. of $\overline{RS}$ and N is the midpt. of $\overline{ST}$. If RT = 17.8, find MN.



$\frac{17.8}{2} = 8.9$

7. If AC = 16, BC = 12, and DE = 5, find EF. = 15



$\frac{16}{5+x} = \frac{12}{x}$

$\frac{4}{5} = \frac{12}{x}$

8. $\Delta ABC \sim \Delta DEF$, AB = 5, BC = 6, AC = 7 and DE = 3.
Find the perimeter of ΔDEF.

$\frac{5}{3} = \frac{18}{x}$

$10\frac{4}{5}$

9. Find the geometric mean between 6 and 8. Leave your answer in simplified radical form.

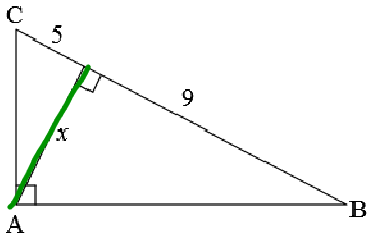
$\frac{6}{x} = \frac{x}{8}$

$48 = x^2$

$x = \sqrt{6 \cdot 8}$

$4\sqrt{3}$

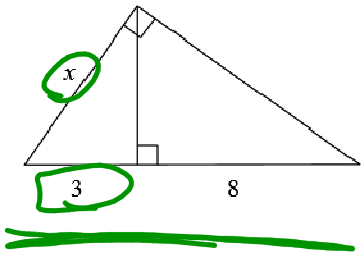
10. Find x in ΔABC.
Leave your answer in simplified radical form.



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

$x = 3\sqrt{5}$

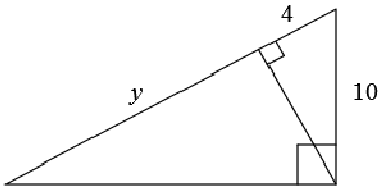
11. Find x. Leave your answer in simplified radical form.



$\frac{11}{x} = \frac{x}{3}$

$x = \sqrt{33}$

12. Find y.

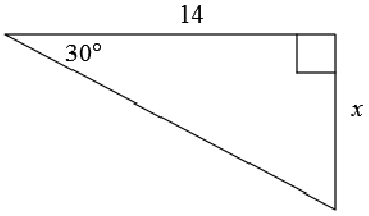


$\frac{4}{10} = \frac{10}{4+y}$

$16+4y = 100$

$y = 21$

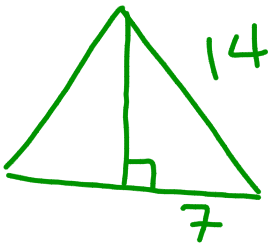
13. Find x.



$\frac{14}{\sqrt{3}}$

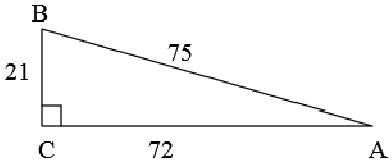
$\frac{14\sqrt{3}}{3}$

14. The perimeter of an equilateral triangle is 42.
Find the height of the triangle.



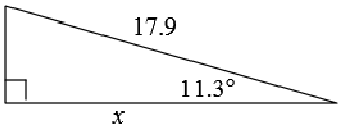
$7\sqrt{3}$

15. Find $\tan B$ in ΔABC.



$\tan B = \frac{72}{21} = \frac{24}{7}$

16. Find x to the nearest tenth.

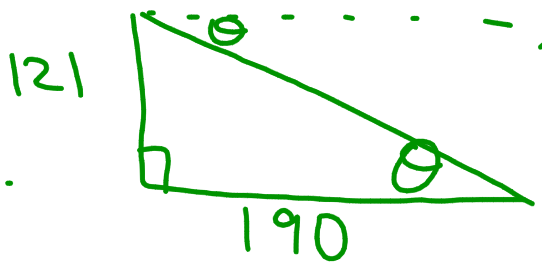


$\cos 11.3^\circ = \frac{x}{17.9}$

$x = 17.9 \cos 11.3^\circ$

$x \approx 17.6$

17. A hot air balloon is 121 ft up in the air. A person in the balloon spots his friend on the ground who is 190 ft away from being directly below the balloon.
Find the $\angle$ of depression. Round to the nearest tenth.



$\tan\theta = \frac{121}{190}$

$\theta = \tan^{-1}\left(\frac{121}{190}\right)$

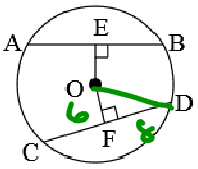
$\theta \approx 32.5^\circ$

18. In ΔABC, $a = 12$, $m\angle B = 68°$, and $m\angle A = 37°$. Find b to the nearest tenth.

$\frac{\sin 37°}{12} = \frac{\sin 68°}{b}$ $b \approx 18.5$

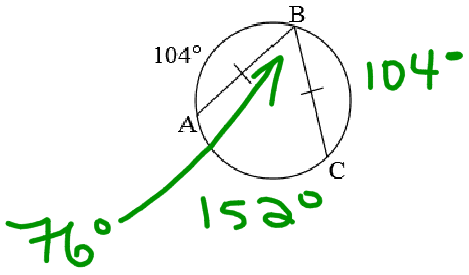
$b = \frac{12 \sin 68}{\sin 37}$

19. If AB =16 cm, OE = OF, and OE = 6 in circle O, find OD.

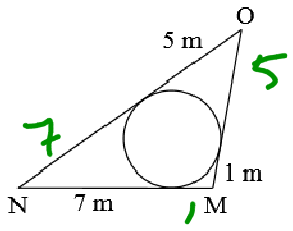


$OD = 10$

20. Find $m\angle ABC$.

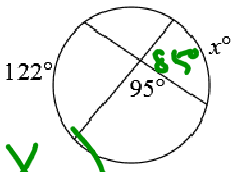


21. If $\overline{MN}$, $\overline{NO}$, and $\overline{MO}$ are tangent to circle P, find the perimeter of ΔMNO.



26 m

22. Find x.

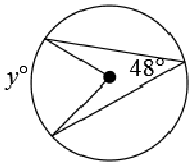


$85 = \frac{1}{2}(122 + x)$

$170 = 122 + x$

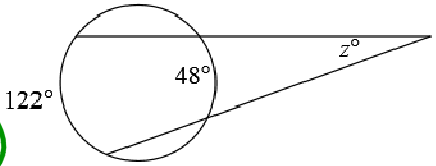
$48 = x$

23. In circle O, Find y.



96°

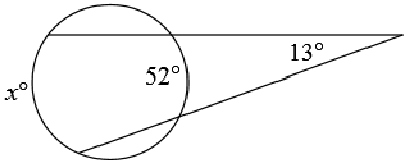
24. Find z.



$z = \frac{1}{2}(122 - 48)$

$z = 37$

25. Find x.

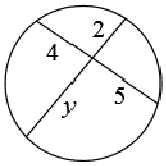


$13 = \frac{1}{2}(x - 52)$

$26 = x - 52$

$x = 78$

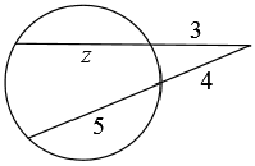
26. Find y.



$4 \cdot 5 = 2y$

$y = 10$

27. Find z.



$3(3+z) = 4(4+5)$

$9 + 3z = 36$

$3z = 27$

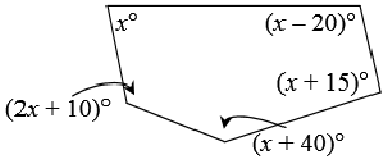
$z = 9$

28. Find the sum of the measures of the interior angles of a convex 32-gon.

$(32-2)180$

$5400°$

29. Find x.



$6x+45=540$

$x=82.5$

30. Find the sum of measures of the exterior angles of a convex 12-gon.

$360°$

$\frac{2340}{15}$

31. Find the measure of one interior angle of a regular 15-gon.

$156°$

32. How many sides does a regular polygon have if each angle measure is 175°?

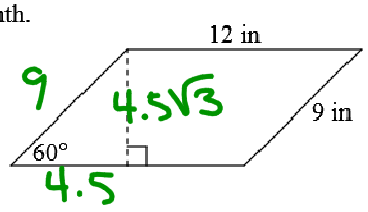
$175n = (n-2)(180)$

$\frac{360}{5}$

72 sides

I	E
175°	5°

33. Find the area of the following parallelogram, to the nearest tenth.

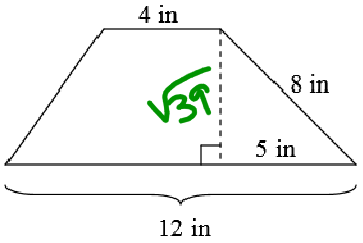


$A = bh$

$= (12)(4.5\sqrt{3})$

$A \approx 93.5 \text{ in}^2$

34. Find the area of the following trapezoid, to the nearest tenth.

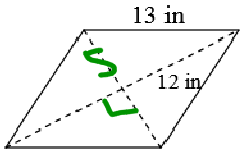


$A = \frac{1}{2}h(b_1 + b_2)$

$= \frac{1}{2}(\sqrt{39})(12+4)$

$\approx 50.0 \text{ in}^2$

35. Find the area of the following rhombus, to the nearest tenth.

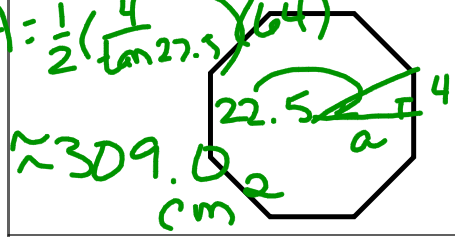


$A = \frac{1}{2}d_1 d_2$

$= \frac{1}{2}(24)(10)$

$A = 120.0 \text{ in}^2$

36. Find the area of a regular octagon with a perimeter of 64 cm., to the nearest tenth.



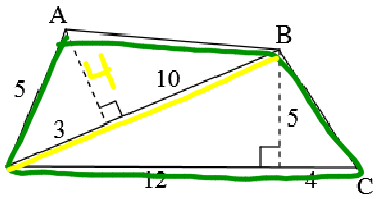
$A = \frac{1}{2}\left(\frac{4}{\tan 22.5}\right)(64)$

$\approx 309.0 \text{ cm}^2$

$\tan 22.5 = \frac{4}{a}$

$a = \frac{4}{\tan 22.5}$ $P = 64$

37. Find the area of quad. ABCD.



$\frac{1}{2}(13)(4) + \frac{1}{2}(16)(5)$

$= 66 \text{ units}^2$

38. Find the area of a circle with a circumference of 16π.

$C = 2\pi r$

$16\pi = 2\pi r$

$8 = r$

$A = \pi r^2$

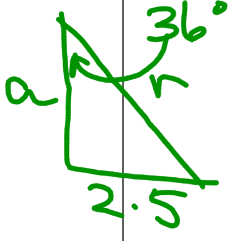
$= \pi(8)^2$

$= 64\pi$, 201.1

39. Find the area of the shaded region, to the nearest tenth.
Assume all polygons are regular

$\pi r^2 - \frac{1}{2}aP$

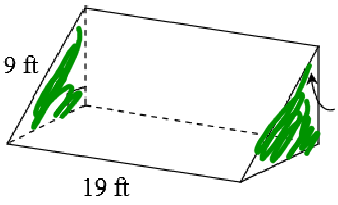
$\pi\left(\frac{2.5}{\sin 36^\circ}\right)^2 - \frac{1}{2}\left(\frac{2.5}{\tan 36^\circ}\right)(5 \cdot 5)$



$\sin 36^\circ = \frac{2.5}{r}$ $\tan 36^\circ = \frac{2.5}{a}$

$r = \frac{2.5}{\sin 36^\circ}$ $a = \frac{2.5}{\tan 36^\circ}$

40. Find the surface area of the following solid.
Round to the nearest tenth.

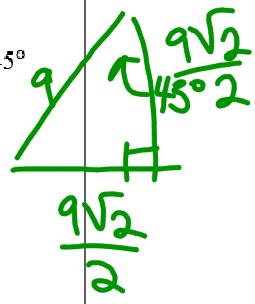


$Ph + 2B$

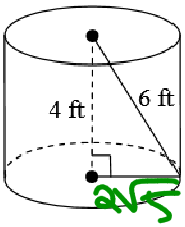
$\left(9 + \frac{18\sqrt{2}}{2}\right)(19) + 2 \cdot \frac{1}{2}bh$

$+ 2 \cdot \frac{1}{2}\left(\frac{9\sqrt{2}}{2}\right)\left(\frac{9\sqrt{2}}{2}\right)$

$9 + \frac{9\sqrt{2}}{2} + \frac{9\sqrt{2}}{2}$ $\quad 453.3 ft^2$



41. Find the surface area of the following solid, to the nearest tenth.



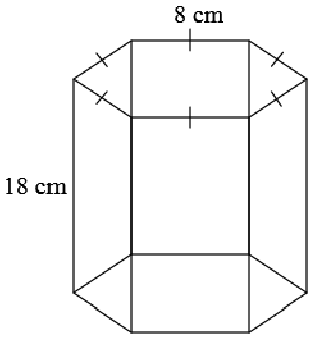
$2\pi rh + 2\pi r^2$

$2\pi(2\sqrt{5})(4) + 2\pi(2\sqrt{5})^2$

$16\pi\sqrt{5} + 2\pi 20$

$\approx \quad 238.1 ft^2$

42. Find the lateral area of the following solid.
Round to the nearest tenth.



Ph

$48 \cdot 18$

$864 cm^2$

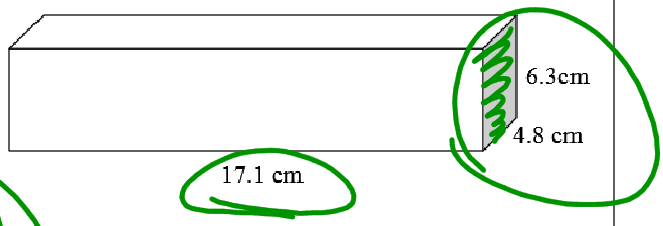
43. Find the volume of the following figure.

Bh

$bh \cdot h$

$(6.3)(4.8)(17.1)$

$517.104\ cm^3$

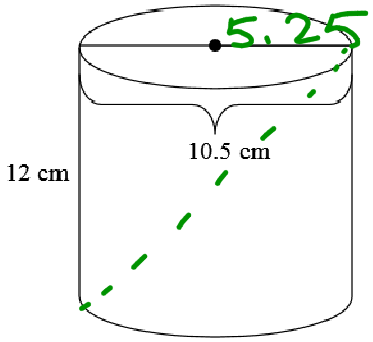


44. Find the volume of the following figure.

$\pi r^2 h$

$\pi \cdot (5.25)^2 (12)$

330.75π



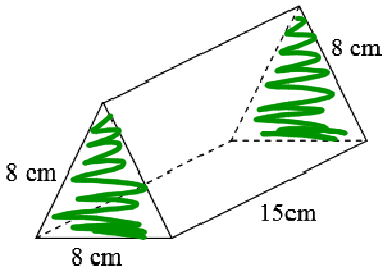
$\frac{1}{2}bh$

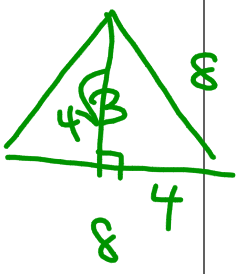
45. Find the volume of the following figure, to the nearest tenth.

$\overline{Bh}$

$\frac{1}{2}(8)(4\sqrt{3})(15)$

$415.7\ cm^3$



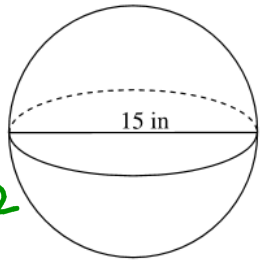


46. Find the surface area of the following solid to the nearest tenth.

$4\pi r^2$

$4\pi(7.5)^2$

$\approx 706.9 \text{ in}^2$



47. Find the volume of the following figure to the nearest tenth.

$V = \frac{4}{3}\pi r^3$

$= \frac{4}{3}\pi\left(\frac{11.5}{\pi}\right)^3$

$C = 2\pi r$

$22.3 = 2\pi r$

$\frac{11.15}{\pi} = r$