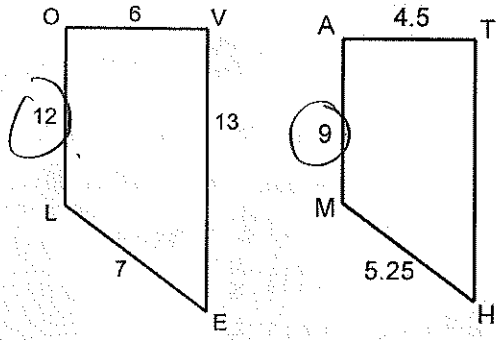
Name Key

GEOMETRY – 2nd Semester
Final Exam Review Open Ended

1. Give the scale factor for the dilation of LOVE→MATH.

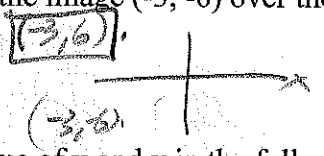


$\frac{9}{12} = \frac{3}{4}$

2. What is the translation image of $(3,10)$ under the translation $(x,y) \rightarrow (x+8, y-15)$.

$3+8, 10-15$
$(11, -5)$

3. What is the reflection of the image (-3, -6) over the x-axis?



4. If $\overline{AB} // \overline{DE}$, find the value of x and y in the following image.

$\frac{x}{15} = \frac{4}{12}$ $\frac{1}{3}$

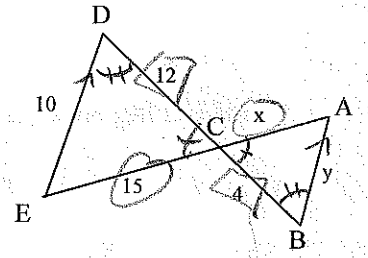
$3x = 15$

$x = 5$

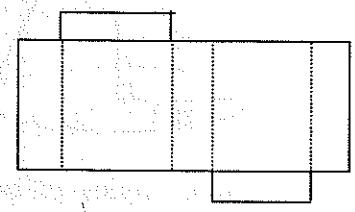
$\frac{y}{10} = \frac{1}{3}$

$3y = 10$

$y = \frac{10}{3}$

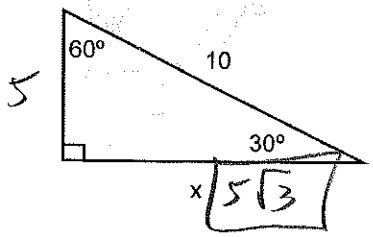


5. Identify the solid formed when the folds are made along the dotted lines from the given net.



right rectangular prism

6. Solve for x in simplified radical form.



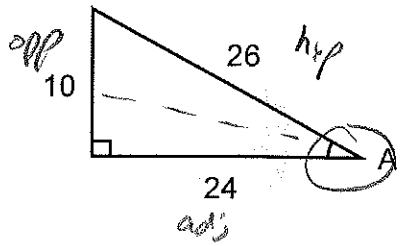
SOH CAH TOA

7. Find:

a. $\sin A = \frac{opp}{hyp} = \frac{10}{26} = \frac{5}{13}$

b. $\cos A = \frac{adj}{hyp} = \frac{24}{26} = \frac{12}{13}$

c. $\tan A = \frac{opp}{adj} = \frac{10}{24} = \frac{5}{12}$



8. Given chords $\overline{BD}$ and $\overline{AC}$ of a circle intersecting at P.

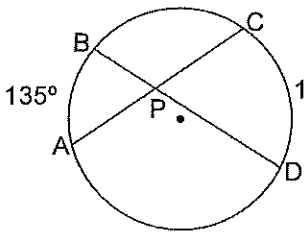
If $m\overset{\frown}{AB} = 135°$ and $m\overset{\frown}{CD} = 120°$, then find $m\angle APB$.

$\text{angle} = \frac{1}{2}(\text{big} + \text{little})$

$= \frac{1}{2}(135 + 120)$

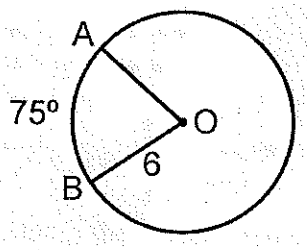
$= \frac{1}{2}(255) = \frac{255}{2}$ or 127.5

135
120
255



127.5
2 / 255
2
5
4
15

9. In circle O, OB = 6 and $m\overset{\frown}{AB} = 75°$. Find the length of arc AB.

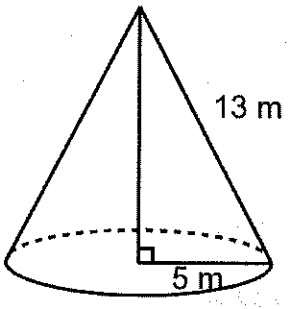


$\text{arc length} = \frac{\text{arc}}{360} \cdot \text{circumference}$

$= \frac{75}{360} \cdot \frac{2\pi(6)}{1} = \frac{75(2)(6)\pi}{360} = \frac{75 \cdot \pi}{30}$

$= \frac{5\pi}{2}$

10. Find the total surface area of a cone if the radius is 5m and the slant height is 13m.



$S.A_{cone} = \pi r l + \pi r^2$

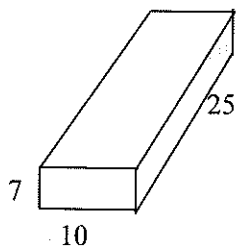
$= \pi(5)(13) + \pi(5)^2$

$= 65\pi + 25\pi$

$= 90\pi \text{ m}^2$

13
5
65
+25
90

11. Find the volume of the right rectangular prism.



$V = l \cdot w \cdot h$

$= 25 \cdot 10 \cdot 7$

$= 1750 \text{ u}^3$

25
x 7
175

12. Add the matrices: $2\begin{bmatrix} -1 & -2 & 3 \\ 7 & 6 & -5 \end{bmatrix} - \begin{bmatrix} 2 & 2 & -6 \\ -3 & 8 & 3 \end{bmatrix}$

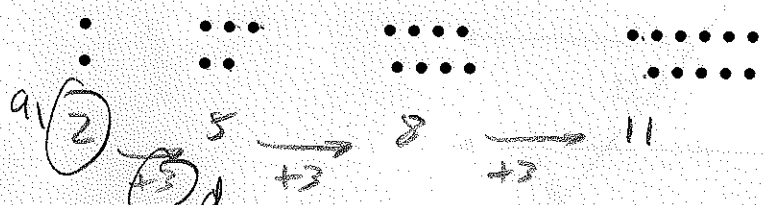
$\begin{bmatrix} -2 & -4 & 6 \\ 14 & 12 & -10 \end{bmatrix} - \begin{bmatrix} 2 & 2 & -6 \\ -3 & 8 & 3 \end{bmatrix} = \boxed{\begin{bmatrix} -4 & -6 & 12 \\ 17 & 4 & -13 \end{bmatrix}}$

13. For the sequence below, what is the rule to determine the next term in the sequence?

$1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \ldots$ $\quad \times -\frac{1}{2}$

multiply by $-\frac{1}{2}$

14. If the pattern of dot-figures is continued, how many dots will be in the 50th figure?



arithmetic seq.

$a_n = a_1 + d(n-1)$

$a_1 = 2 + 3(n-1)$

$a_{50} = 2 + 3(50-1)$
$= 2 + 3(49)$
$= 2 + 147$
$= \boxed{149 \text{ dots}}$

15. Match the correct name for each given formula.

a. *(area of the circular base) x (height)* [g]

b. *(2) x (pi) x (radius)* [h] $2\pi r = c$

c. *(area of the circular base) + (pi) x (radius) x (slant height)* [j] $\pi r^2 + \pi r l$

d. *(2)x(pi)x(radius) (height) + (2)x(area of the circular base)* [i] $\pi r h + 2\pi r^2$

e. *(area of the circular base) x (height) / 3* [f] $\frac{1}{3}\pi r^2 h$

f. volume of a cone
g. volume of a cylinder
h. circumference
i. surface area of a cylinder
j. surface area of a cone

16. In the figure below ABCD is similar to PQRS.

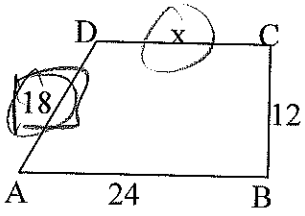
everything is proportional use fractions

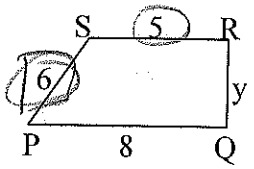
A. Find the value of x

$\frac{x}{5} = \frac{18}{6}$ $\quad \boxed{x = 15}$

B. Find the value of y.

$\frac{y}{12} = \frac{6}{18}$ $\quad 3y = 12$ $\quad \boxed{y = 4}$





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multiply by $-\frac{1}{2}$

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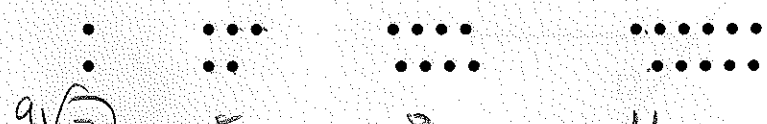


a_1 2 → 5 (+3) → 8 (+3) → 11 (+3) d

arithmetic seq.

$a_n = a_1 + d(n-1)$

$a_1 = 2 + 3(n-1)$

$a_{50} = 2 + 3(50-1)$

$= 2 + 3(49)$

$= 2 + 147$

$= 149$ dots

15. Match the correct name for each given formula.

a. *(area of the circular base) x (height)* g

b. *(2) x (pi) x (radius)* h

c. *(area of the circular base) + (pi) x (radius) x (slant height)* j

d. *(2)x(pi)x(radius) (height) + (2)x(area of the circular base)* i

e. *(area of the circular base) x (height) / 3* f

$\pi r^2 + \pi r l$

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

$\frac{1}{3}\pi r^2 h$

$2\pi r = c$

f. volume of a cone

g. volume of a cylinder

h. circumference

i. surface area of a cylinder

j. surface area of a cone

16. In the figure below ABCD is similar to PQRS.

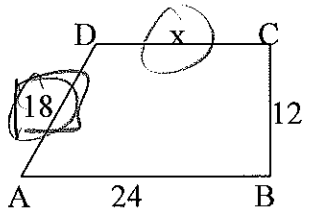
everything is proportional use fractions

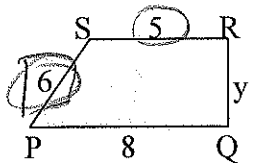
A. Find the value of x.

$\frac{x}{5} = \frac{18}{6} \cdot \frac{3}{1}$ $x = 15$

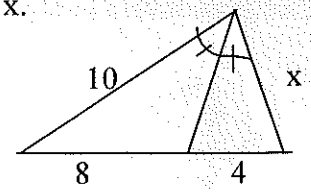
B. Find the value of y.

$\frac{y}{12} = \frac{6}{18} \cdot \frac{1}{3}$ $3y = 12$ $y = 4$



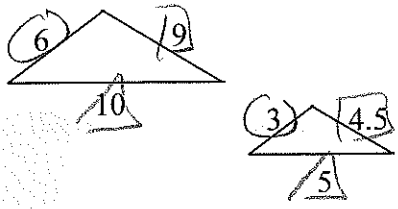


17. Find the value of x.



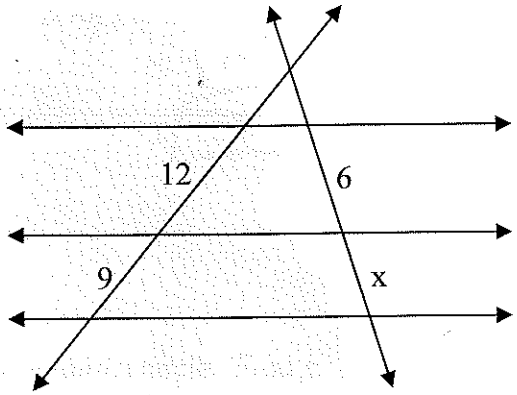
$\frac{x}{4} = \frac{10}{8}$ $4x = 20$ $x = 5$

18. Determine whether the pair of triangles is similar. If they are give the reason (AA, SAS, SSS).



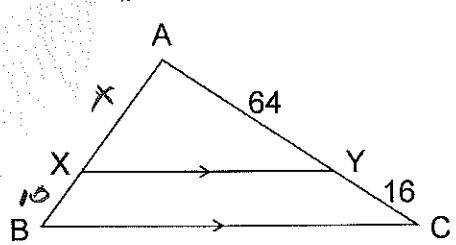
$\frac{6}{3} = 2$ $\frac{9}{4.5} = 2$ $\frac{10}{5} = 2$ SSS~

19. In the figure, find x.



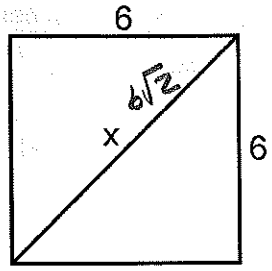
$\frac{x}{6} = \frac{9}{12}$ $4x = 18$ $x = \frac{18}{4} = \frac{9}{2}$ or 4.5

20. If $\overline{XY} \parallel \overline{BC}$ AY = 64, YC = 16, and XB = 10, Find AX.



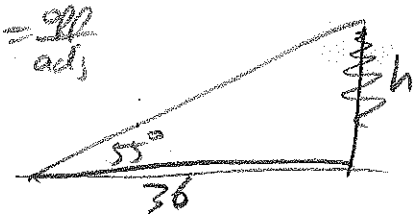
$\frac{x}{10} = \frac{64}{16}$ $x = 40$

21. Find x in simplified radical form.



$6\sqrt{2}$

22. When the sun's angle of elevation is 55°, a tree casts a shadow of 36 feet. How tall is the tree to the nearest tenth?



$\tan A = \frac{opp}{adj}$

$\tan 55° = \frac{h}{36}$

$1.4281 = \frac{h}{36}$

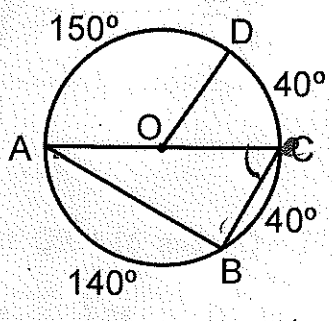
$h = 36(1.4281)$

51.4116 ft

Sin 55 = .8192
Cos 55 = .5736
Tan 55 = 1.4281

$$\begin{array}{r} 1.4281 \\ \times\ 36 \\ \hline 85686 \\ 42843 \\ \hline 51.4116 \end{array}$$

23. Given circle O, find $m \angle ACB$.

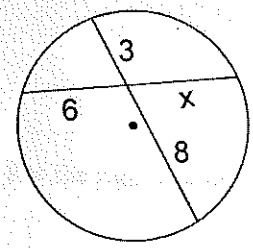


$\text{angle} = \frac{1}{2} \cdot \text{arc}$

$= \frac{1}{2} \cdot 140$

$= 70°$

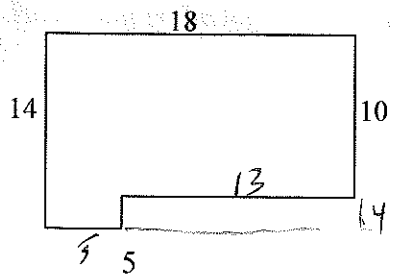
24. Given two intersecting chords within a circle. Find x.



$\frac{6x}{6} = \frac{3(8)}{6}$

$x = \frac{3 \cdot 8}{6 \cdot 2} = \frac{8}{2} = 4$

25. Find the area of the figure. Assume right angles.



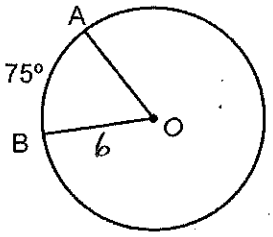
$A_{largest} = 18 \cdot 14 = 252$

$A_{hole} = 13 \cdot 4 = 52$

200 u²

$$\begin{array}{r} 18 \\ \times\ 14 \\ \hline 72 \\ 18 \\ \hline 252 \end{array} \qquad \begin{array}{r} 13 \\ \times\ 4 \\ \hline 52 \end{array}$$

26. In circle O, OB = 6 and $m\overset{\frown}{AB} = 75°$. Find the area of sector AOB to the nearest 10^{th}.



$A_{sect.} = \frac{arc}{360}\pi r^2$

$= \frac{75}{360}\pi(6)^2 = \frac{75\pi 36}{360} = \frac{75\pi}{10} = \boxed{\frac{15\pi}{2}}$

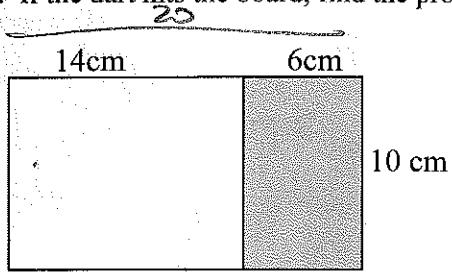
3,14
715
1570
2198
23550

7.5 (3,14) 23,550

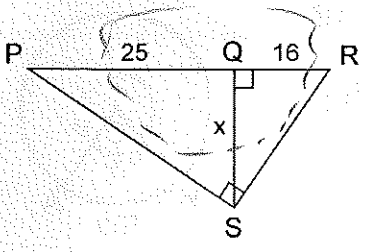
23,16

27. A dart is thrown at random at the board shown. If the dart hits the board, find the probability that it will land in the shaded area.

$P = \frac{shaded}{whole} = \frac{60}{20} = \frac{6}{20} = \boxed{\frac{3}{10}}$



28. If QR = 16 and PQ = 25, then find QS.



grouping problem

(top #)^2 = other numbers multiplied

$x^2 = 25(16)$

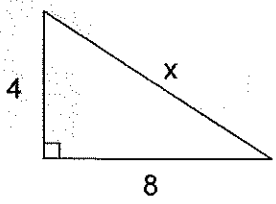
$x^2 = 400$

$\boxed{x = 20}$

325
16
150
25
400

20
20
400

29. For the right triangle, solve for *x.* in simplified radical form.



not a triple, use Pythagorean Theorem

$4^2 + 8^2 = x^2$

$16 + 64 = x^2$

$80 = x^2$ $\quad x = \sqrt{80} = \boxed{4\sqrt{5}}$

64
16
80

$\sqrt{80}$

$\sqrt{4}\ \sqrt{20}$

$2\sqrt{4}\sqrt{5}$

$2 \cdot 2 \cdot \sqrt{5}$

$4\sqrt{5}$

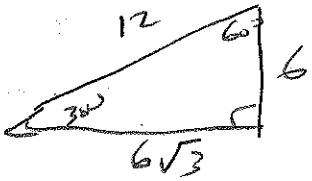
30. The hypotenuse of a 30° - 60° - 90° triangle measures 12.

a. How long is the leg opposite the 60° angle?

$\boxed{6\sqrt{3}}$

b. How long is the leg adjacent the 60° angle?

$\boxed{6}$



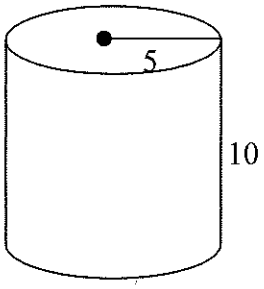
31. Find the volume of the cylinder.

$V_{cyl} = \pi r^2 h$

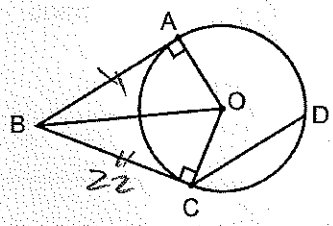
$= \pi (5)^2 (10)$

$= \pi\ 25 \cdot 10$

$= 250\pi\ u^3$

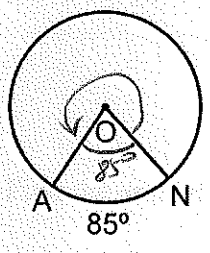


32. Given circle O, if $\overline{CB} = 22$. Find the length of $\overline{AB}$.



22

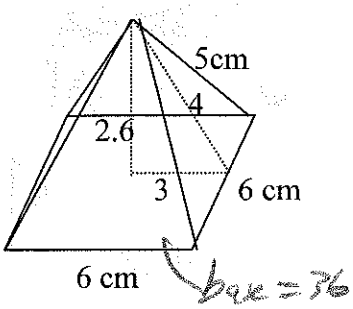
33. Given circle O with $m\widehat{AN} = 85°$, find $m\angle NOA$.

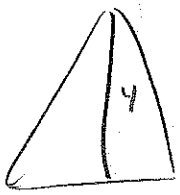


360 − 85 = 275

275°

34. Find the total surface area of the pyramid.





$A = \frac{1}{2} 6 \cdot 4$

$= 3 \cdot 4 = 12$

$\times 4$ sides

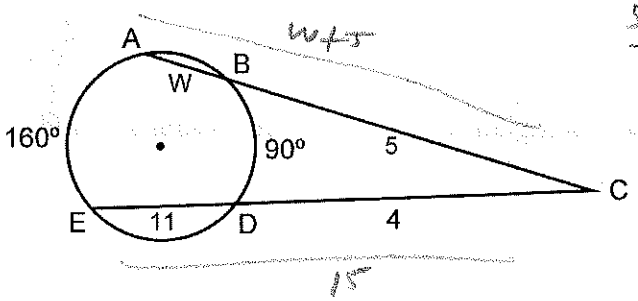
48

$b_{ase} = 36$

48 + 36 = 84

84 cm²

35. Given circle O, find w.



$\frac{5(w+5)}{5} = \frac{4(15)}{5}$

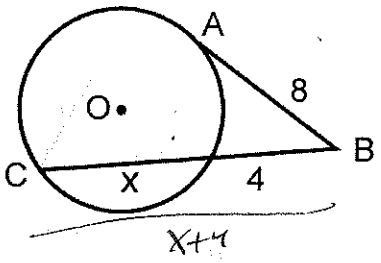
$w + 5 = \frac{4 \cdot 15}{5} = 12$

$w + 5 = 12$

$-5 \quad -5$

$w = 7$

36. Given tangent $\overline{AB}$ to circle O, find x.



$4(x+4) = 8^2$

$x+4 = \frac{8 \cdot 8}{4} = 16$

$x+4 = 16$

$-4 \quad -4$

$x = 12$

37. Given the volume of a cone is 18π cm^3 and the height of the cone is 6 cm, find the radius of the cone.

$V_{cone} = \frac{1}{3}\pi r^2 h$

$18\pi = \frac{1}{3}\pi r^2(6) = \frac{\pi r^2 6}{3} = 2\pi r^2$

$\frac{18\pi}{2\pi} = \frac{2\pi r^2}{2\pi}$

$9 = r^2$

$r = 3$ cm

38. What is the center and radius of the circle $(x-5)^2 + (y+6)^2 = 9$

Center $(5, -6)$

$r = 3$

39. Find the area of a circle with a circumference of 12π. Leave answer in π units.

$C = 2\pi r$

$\frac{12\pi}{2\pi} = \frac{2\pi r}{2\pi}$

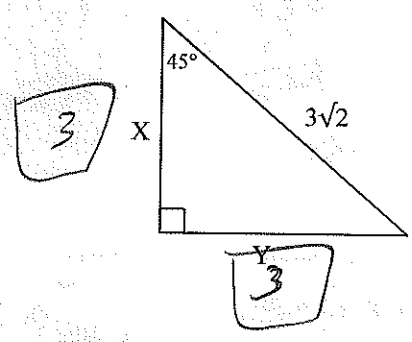
$6 = r$

$A = \pi r^2$

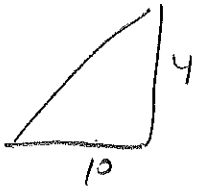
$A = \pi(6)^2$

$A = 36\pi$

40. Find the values of X and Y.



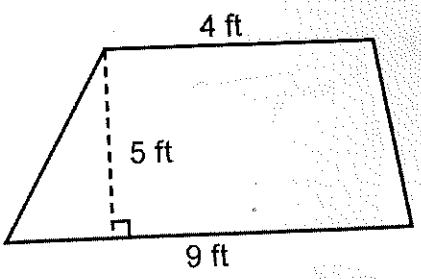
41. Find the area of the triangle if the height is 4 feet and the base is 10 feet long.



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

$= \frac{1}{2}(10)(4) = 5 \cdot 4 = 20$

42. Find the area of the trapezoid.

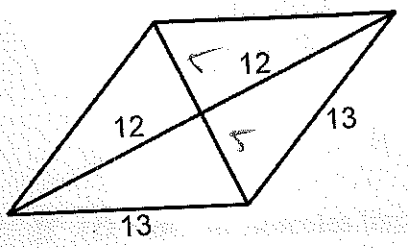


$A = \frac{1}{2}h(b_1 + b_2)$

$= \frac{1}{2}(5)(4+9)$

$= \frac{5}{2}(13) = \frac{65}{2}$ or 32.5 ft

43. Find the area of the rhombus.



$A = \frac{1}{2}d_1d_2$

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

$= 120$

44. Find the area of a regular pentagon if its apothem is 5.5 and each of its sides is 8.

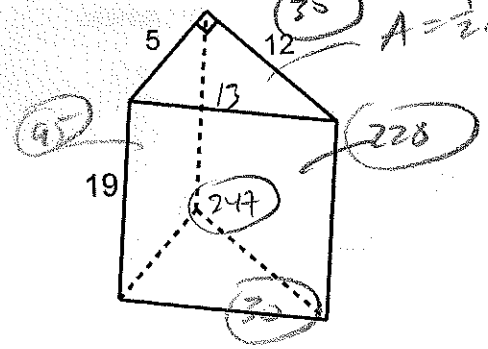
5 sides
$p = 40$

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

$= \frac{1}{2}(5.5)(40) = 5.5 \cdot 20$

$= 110$

45. Find the total surface area of the prism.



30

$A = \frac{1}{2}(12)(5) = 6 \cdot 5 = 30$

95

228

247

$19 \times 13 = 247$

$\frac{1}{2}(19)(12) = 19 \cdot 6 = 114$

$114 \times 2 = 228$

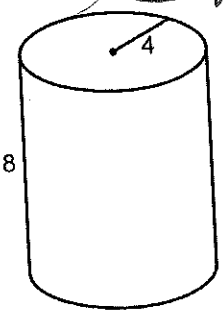
$95 \times 2 = 190$

$247 + 30 + 30 + 228 + 190 = 630$

630 u^2

46. Find the **lateral** area of the right circular cylinder. Leave answer in π units.

no bases



S.A. cylinder = ~~$2\pi r^2$~~ $+ 2\pi rh$

$= 2\pi rh$

$= 2\pi(4)(8)$

$= 8 \cdot 8 \cdot \pi = 64\pi$

47. Find the volume of the sphere with radius 6 units. Leave answer in π form.

$V_{sphere} = \frac{4}{3}\pi r^3$

$= \frac{4}{3}\pi 6^3 = \frac{4\pi 6 \cdot 6 \cdot 6}{3} = 8\pi 36$

$= 288\pi$

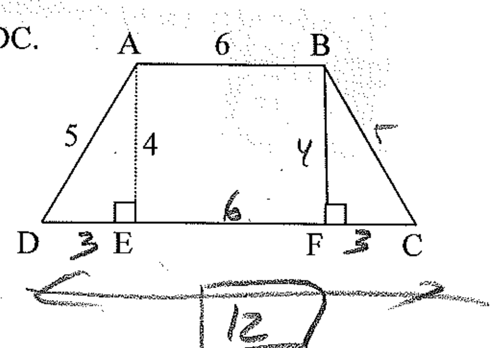
48. The base of a triangle is 12 cm and the area is 54cm^2. Find the height of the triangle.

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

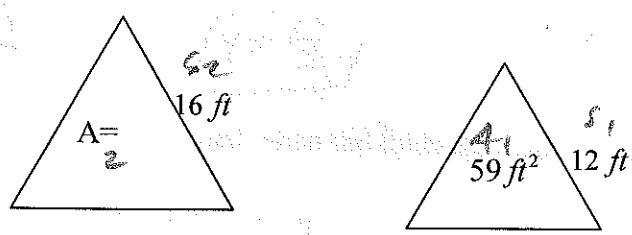
$54 = \frac{1}{2} 12h = 6h$

$9 = h$ $h = 9\text{ cm}$

49. If $\overline{AD} \cong \overline{BC}$ in isosceles trapezoid ABCD, find DC.



50. The two polygons are similar. The area of one polygon is given. Find the area of the larger polygon to the nearest 10^{th}.



$\frac{A_2}{A_1} = \frac{s_2^2}{s_1^2}$

$\frac{A_2}{59} = \left(\frac{16}{12}\right)^2 = \left(\frac{4}{3}\right)^2 = \frac{16}{9}$

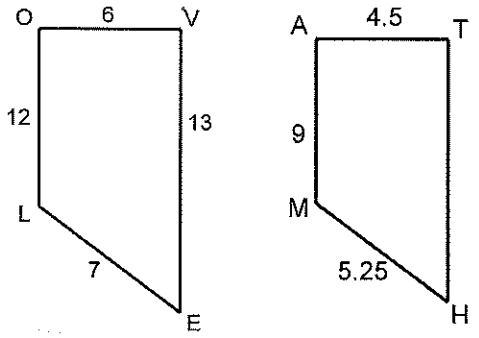
$9A_2 = 16(59) = 944$

$A_2 = \frac{944}{9}$ $= 104.9\text{ ft}^2$

Name_____

GEOMETRY – 2nd Semester
Final Exam Review Open Ended

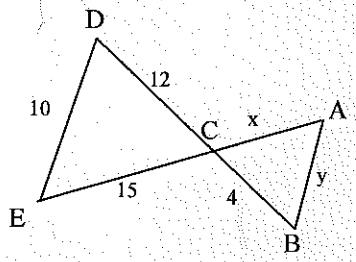
1. Give the scale factor for the dilation of LOVE→MATH.



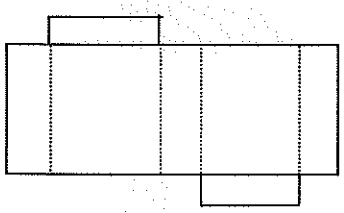
2. What is the translation image of $(3,10)$ under the translation $(x,y)\rightarrow(x+8,y-15)$.

3. What is the reflection of the image (-3, -6) over the x-axis?

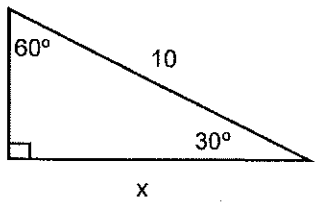
4. If $\overline{AB}//\overline{DE}$, find the value of x and y in the following image.



5. Identify the solid formed when the folds are made along the dotted lines from the given net.



6. Solve for x in simplified radical form.

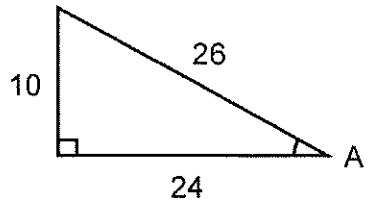


7. Find:

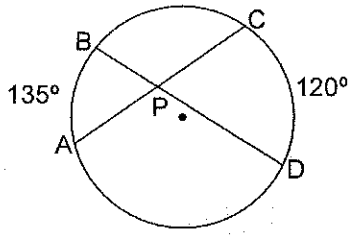
a. $\sin A =$

b. $\cos A =$

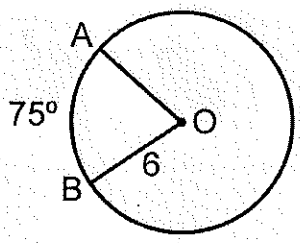
c. $\tan A =$



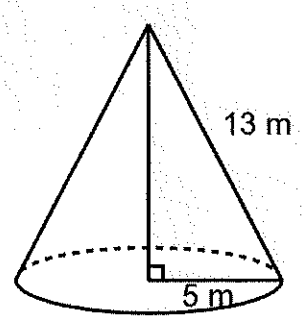
8. Given chords $\overline{BD}$ and $\overline{AC}$ of a circle intersecting at P.
If $m\overset{\frown}{AB} = 135°$ and $m\overset{\frown}{CD} = 120°$, then find $m\angle APB$.



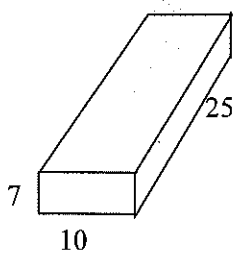
9. In circle O, OB = 6 and $m\overset{\frown}{AB} = 75°$. Find the length of arc AB.



10. Find the total surface area of a cone if the radius is 5m and the slant height is 13m.



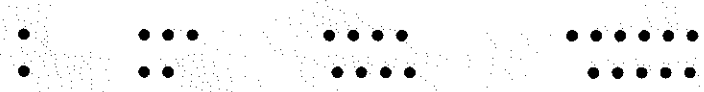
11. Find the volume of the right rectangular prism.



12. Add the matrices: $2\begin{bmatrix} -1 & -2 & 3 \\ 7 & 6 & -5 \end{bmatrix} - \begin{bmatrix} 2 & 2 & -6 \\ -3 & 8 & 3 \end{bmatrix}$

13. For the sequence below, what is the rule to determine the next term in the sequence?
$1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \ldots$

14. If the pattern of dot-figures is continued, how many dots will be in the 50th figure?



15. Match the correct name for each given formula.

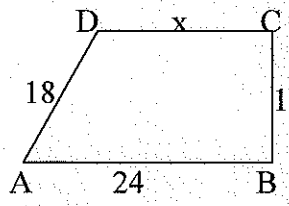
a. *(area of the circular base) x (height)*_____
*b. (2) x (pi) x (radius)*_____
*c. (area of the circular base) + (pi) x (radius) x (slant height)*_____
*d. (2)x(pi)x(radius) (height) + (2)x(area of the circular base)*_____
*e. (area of the circular base) x (height) / 3*_____

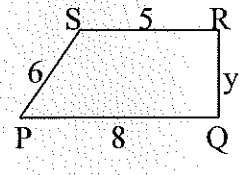
f. volume of a cone
g. volume of a cylinder
h. circumference
i. surface area of a cylinder
j. surface area of a cone

16. In the figure below ABCD is similar to PQRS.

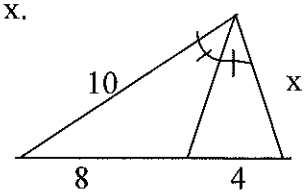
A. Find the value of x.

B. Find the value of y.

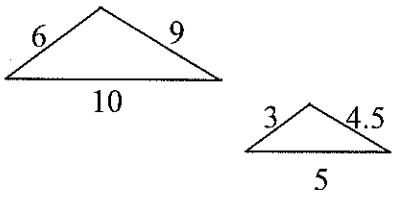




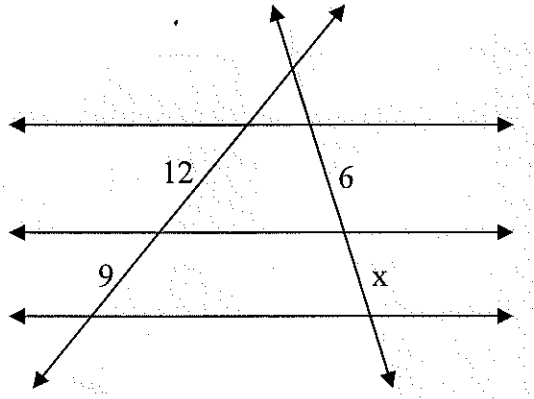
17. Find the value of x.



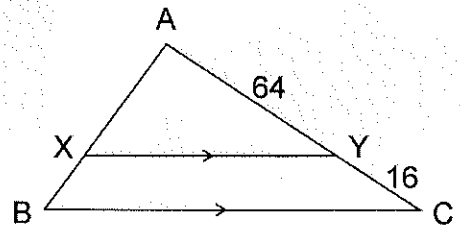
18. Determine whether the pair of triangles is similar. If they are give the reason (AA, SAS, SSS).



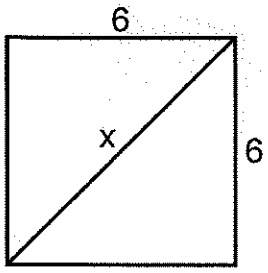
19. In the figure, find x.



20. If $\overline{XY} \parallel \overline{BC}$ AY = 64, YC = 16, and XB = 10, Find AX.



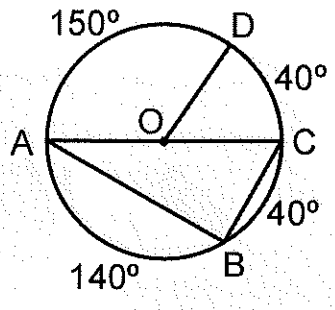
21. Find x in simplified radical form.



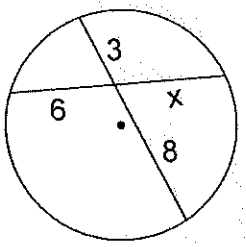
22. When the sun's angle of elevation is 55°, a tree casts a shadow of 36 feet. How tall is the tree to the nearest tenth?

Sin 55 = .8192
Cos 55 = .5736
Tan 55 = 1.4281

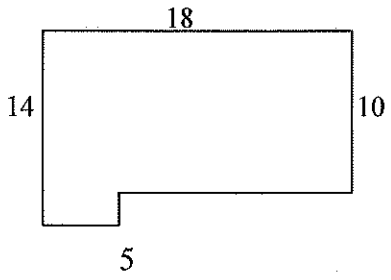
23. Given circle O, find $m \angle ACB$.



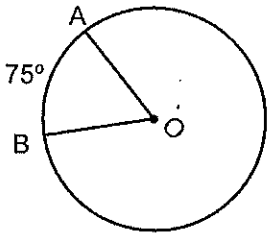
24. Given two intersecting chords within a circle. Find x.



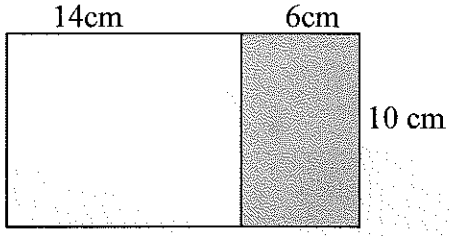
25. Find the area of the figure. Assume right angles.



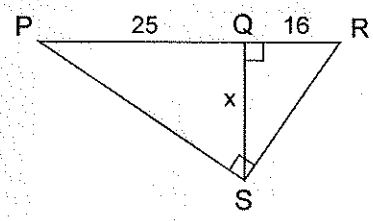
26. In circle O, OB = 6 and $m\overset{\frown}{AB} = 75°$. Find the area of sector AOB to the nearest 10^{th}.



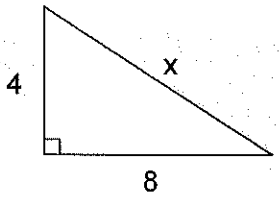
27. A dart is thrown at random at the board shown. If the dart hits the board, find the probability that it will land in the shaded area.



28. If QR = 16 and PQ = 25, then find QS.



29. For the right triangle, solve for *x.* in simplified radical form.

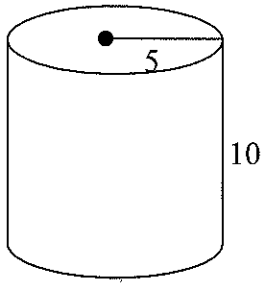


30. The hypotenuse of a 30° - 60° - 90° triangle measures 12.

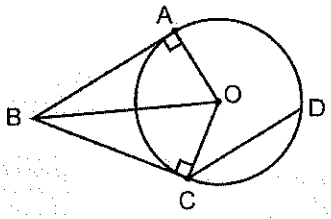
a. How long is the leg opposite the 60° angle?

b. How long is the leg adjacent the 60° angle?

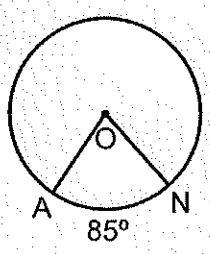
31. Find the volume of the cylinder.



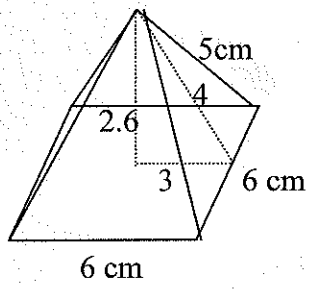
32. Given circle O, if $\overline{CB} = 22$. Find the length of $\overline{AB}$.



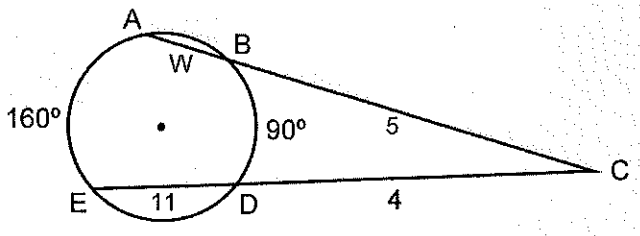
33. Given circle O with $m\widehat{AN} = 85°$, find $m\angle NOA$.



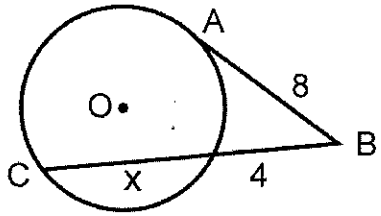
34. Find the total surface area of the pyramid.



35. Given circle O, find w.



36. Given tangent $\overline{AB}$ to circle O, find x.

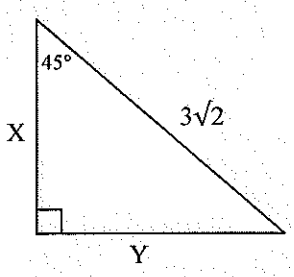


37. Given the volume of a cone is 18π cm^3 and the height of the cone is 6 cm, find the radius of the cone.

38. What is the center and radius of the circle $(x-5)^2 + (y+6)^2 = 9$

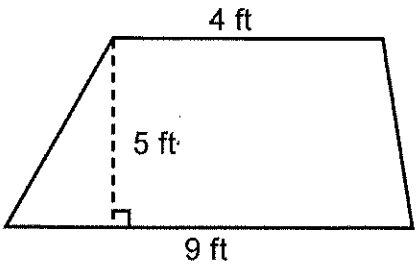
39. Find the area of a circle with a circumference of 12π. Leave answer in π units.

40. Find the values of X and Y.

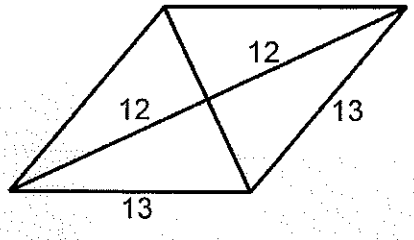


41. Find the area of the triangle if the height is 4 feet and the base is 10 feet long.

42. Find the area of the trapezoid.

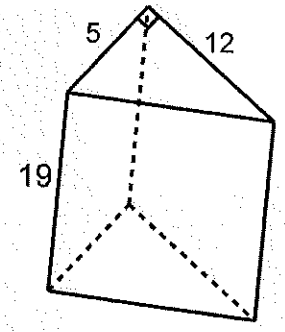


43. Find the area of the rhombus.

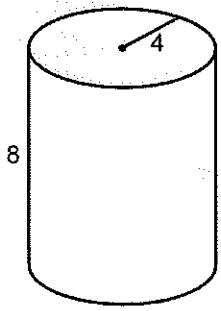


44. Find the area of a regular pentagon if its apothem is 5.5 and each of its sides is 8.

45. Find the total surface area of the prism.



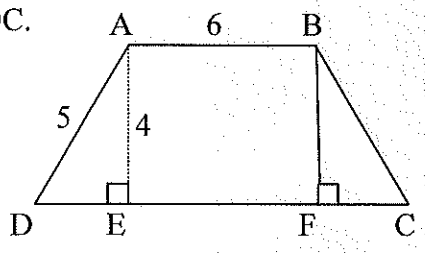
46. Find the **lateral** area of the right circular cylinder. Leave answer in π units.



47. Find the volume of the sphere with radius 6 units. Leave answer in π form.

48. The base of a triangle is 12 cm and the area is $54cm^2$. Find the height of the triangle.

49. If $\overline{AD} \cong \overline{BC}$ in isosceles trapezoid ABCD, find DC.



50. The two polygons are similar. The area of one polygon is given. Find the area of the larger polygon to the nearest 10^{th}.