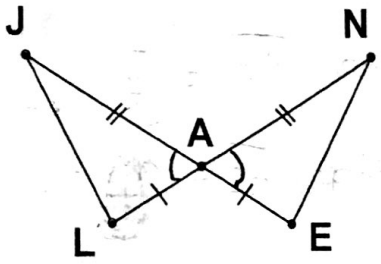
Geometry Practice Final Name: Key

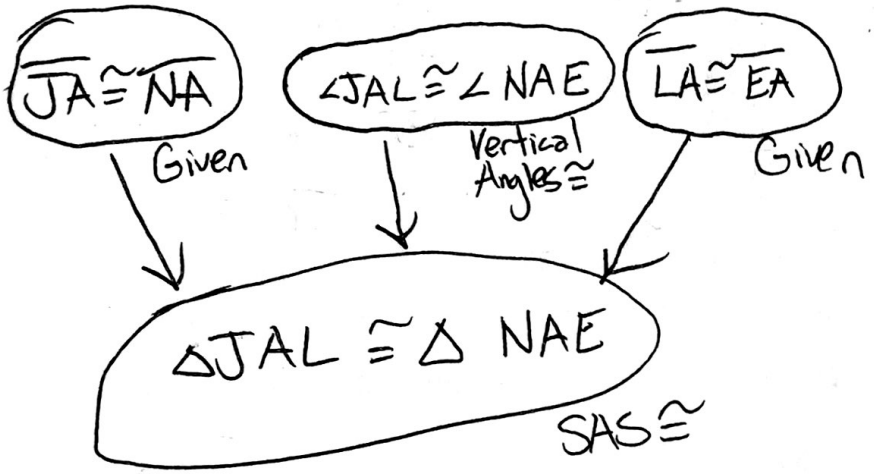
G5: Triangle and Quadrilateral Application and Proof

C-Level:

Use a flowchart or two-column proof to prove the triangles in the figure are congruent.

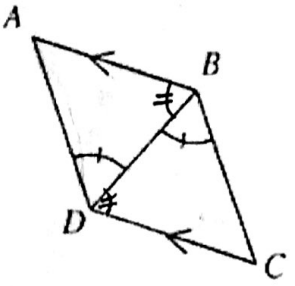


Statements	Reasons
① $\overline{JA} \cong \overline{NA}$	① Given
② $\angle JAL \cong \angle NAE$	② Vertical Angles
③ $\overline{LA} \cong \overline{EA}$	③ Given
④ $\triangle JAL \cong \triangle NAE$	④ SAS$\cong$



B – Level:

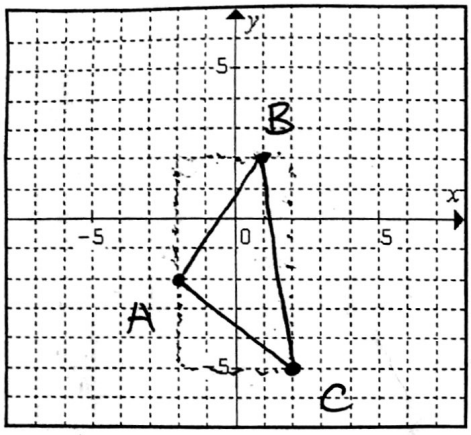
Use a flowchart or two-column proof to prove $\overline{AD} \cong \overline{BC}$



Statements	Reasons
① $\overline{AB} \parallel \overline{DC}$	① Given
② $\angle ABD \cong \angle CDB$	② Alternate Interior Angles$\cong$
③ $\overline{BD} \cong \overline{DB}$	③ Reflexive Property
④ $\angle ADB \cong \angle CBD$	④ Given
⑤ $\triangle ADB \cong \triangle CBD$	⑤ ASA$\cong$
⑥ $\overline{AD} \cong \overline{BC}$	⑥ CPCTC

G6: Coordinate Geometry

C – Level: Plot and connect points A (-2, -2), B (1, 2) and C (2, -5). What kind of triangle is this? Mathematically justify.



What is the perimeter

$\overline{AB} = \sqrt{4^2+3^2}$
$= \sqrt{16+9}$
$= \sqrt{25} = 5$

$\overline{BC} = \sqrt{1^2+7^2}$
$= \sqrt{1+49}$
$= \sqrt{50}$
≈ 7.07

$\overline{AC} = \sqrt{3^2+4^2}$
$= \sqrt{9+16}$
$= \sqrt{25}$
$= 5$

slope $\overline{AB} = \frac{4}{3}$

slope $\overline{AC} = -\frac{3}{4}$

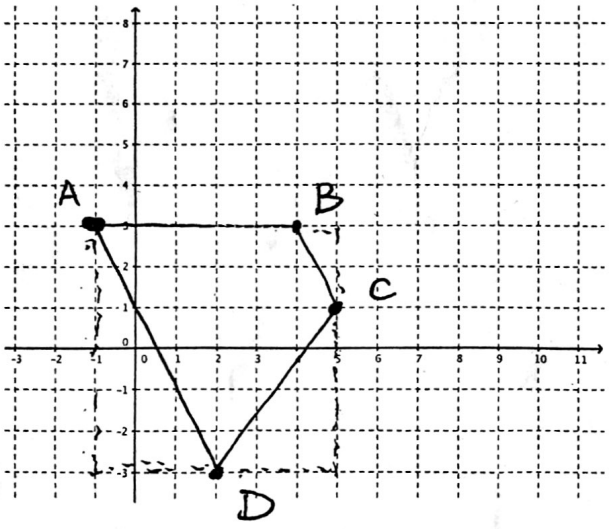
negative reciprocals

$\angle A = 90°$

$\triangle ABC$ is a right Isosceles

$P = 5 + 7.07 + 5 = 17.07$ units

B – Level: Plot and connect the points of ABCD if A(-1, 3), B(4, 3), C(5, 1), D(2, -3). Determine the most accurate name for the shape and justify your answer with calculations.



$\overline{AB} = 5$ un

$\overline{BC} = \sqrt{1^2+2^2}$
$= \sqrt{1+4} = \sqrt{5}$
≈ 2.24 un

$\overline{DC} = \sqrt{3^2+4^2}$
$= \sqrt{9+16}$
$= \sqrt{25} = 5$ un

$\overline{AC} = \sqrt{3^2+6^2}$
$= \sqrt{9+36}$
$= \sqrt{45} \approx 6.7$ un

Perimeter $= 5 + 2.24 + 5 + 6.71$
$= 18.95$ units

Slope $\overline{BC} = -\frac{2}{1}$

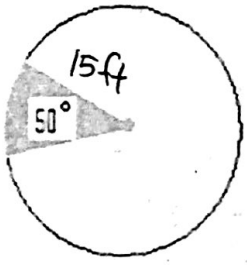
Slope $\overline{AD} = -\frac{2}{1}$

isosceles trapezoid

G7: Circles

Level:

a. Find the area of the shaded region and the arc length if the radius is 15 ft.



Area of Sector

$= \left(\frac{50}{360}\right)\pi 15^2$

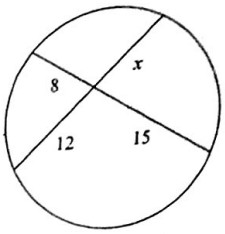
$= 98.17\ ft^2$

Arc Length

$= \left(\frac{50}{360}\right)2\pi(15)$

$\approx 13.09\ ft$

b. Solve for x.



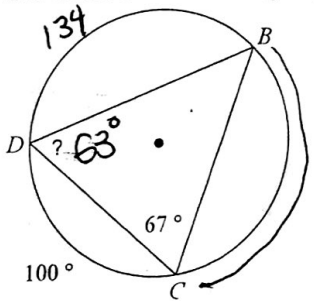
$12x = 8 \cdot 15$

$\frac{12x}{12} = \frac{120}{12}$

$x = 10$

B – Level:

a. Find the value of the missing angle.



$360 - 100 - 134 = 126$

126°

b. Identify the center and radius of the following circle:

$x^2 + (y-5)^2 = 20$

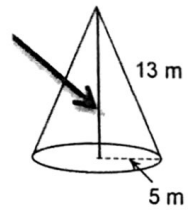
center = (0, 5)

radius = $\sqrt{20} \approx 4.47$

G8: Solids

C – Level: Find the surface Area and Volume of the following solids

a.



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

$= 204.20 + 78.5398$

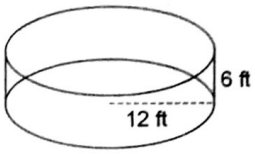
$S.A. = 272.74\ m^2$

$V = \left(\frac{1}{3}\right) \cdot \pi \cdot 5^2 \cdot 12$

$= \left(\frac{1}{3}\right) \cdot 300\pi$

$V = 100\pi \approx 314.16\ m^3$

b.



$SA. = 2\pi(12)(6) + 2\pi 12^2$

$= 452.389 + 904.7787$

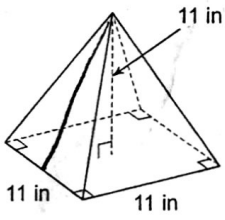
$S.A. = 1357.17\ ft^2$

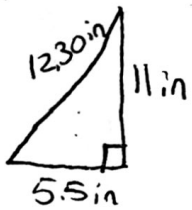
$V = \pi \cdot 12^2 \cdot 6$

$V \approx 2714.34\ ft^3$

B – Level: Complete both parts.

a. Find the surface area of the pyramid





$5.5^2 + 11^2 = c^2$

$30.25 + 121 = c^2$

$151.25 = c^2$

$c = 12.30$

$= A = \frac{1}{2} \cdot 11 \cdot 12.3$

$= 67.65$

$= A = 11 \cdot 11$

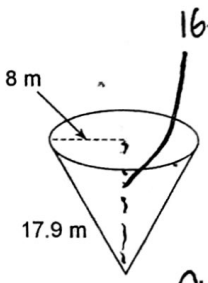
$= 121$

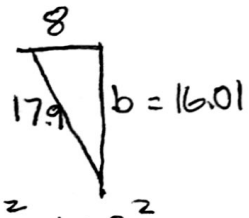
$S.A. = 4(67.65) + 121$

$270.6 + 121$

$SA. = 391.6\ in^2$

b. Find the volume of the cone





$8^2 + b^2 = 17.9^2$

$64 + b^2 = 320.41$

$-64 \qquad -64$

$b^2 = 256.41$

$b = 16.01$

$V = \left(\frac{1}{3}\right) \cdot \pi \cdot 8^2 \cdot 16.01$

$= \left(\frac{1}{3}\right) \pi \cdot 1024.64$

$V \approx 1073\ m^3$