

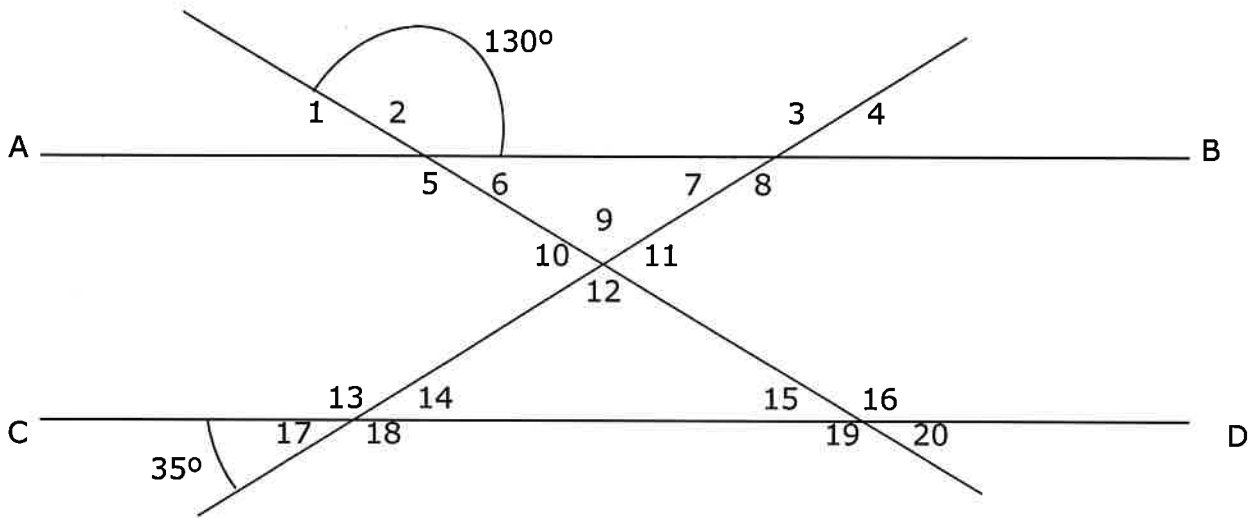
SOUTHERN CALIFORNIA SURVEYORS JOINTS APPRENTICESHIP COMMITTEE

STUDY GUIDE FOR QUALIFICATION TEST

This guide is for use in preparing for the required algebra and geometry test.

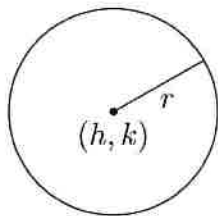
GEOMETRY

Relations of Angles between Parallel Lines and Transversals

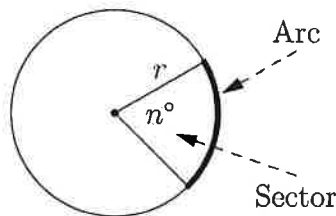


Elements of a Circle: Area, Circumference, Radius, Diameter

Figuring the Arc Length of a Fractional Part of a Circle



$$\begin{aligned} \text{Area} &= \pi r^2 \\ \text{Circumference} &= 2\pi r \\ \text{Full circle} &= 360^\circ \end{aligned}$$

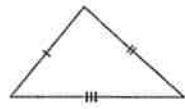


$$\begin{aligned} \text{Length Of Arc} &= (n^\circ/360^\circ) \cdot 2\pi r \\ \text{Area Of Sector} &= (n^\circ/360^\circ) \cdot \pi r^2 \end{aligned}$$

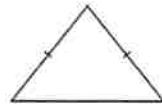
Elements and Types of Triangles

Elements of an Isosceles Triangle

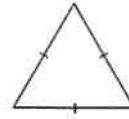
CLASSIFICATION BY SIDES



Scalene triangle
no equal sides

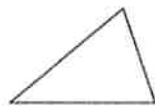


Isosceles triangle
two equal sides



Equilateral triangle
three equal sides

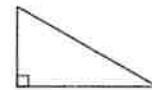
CLASSIFICATION BY ANGLES



Acute angled triangle
all acute angles



Obtuse angled triangle
one obtuse angle

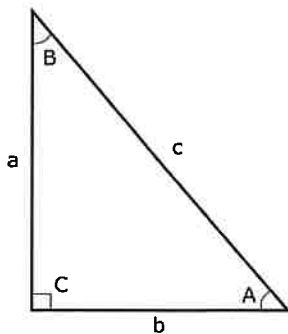


Right angled triangle
one right angle

Figuring Angles in a Right Triangle

Figuring the Side of a Right Triangle

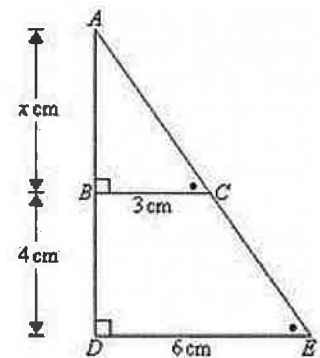
Similar Right Triangles



$$\sin A = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{a}{c}$$

$$\cos A = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{b}{c}$$

$$\tan A = \frac{\text{opposite}}{\text{adjacent}} = \frac{a}{b}$$



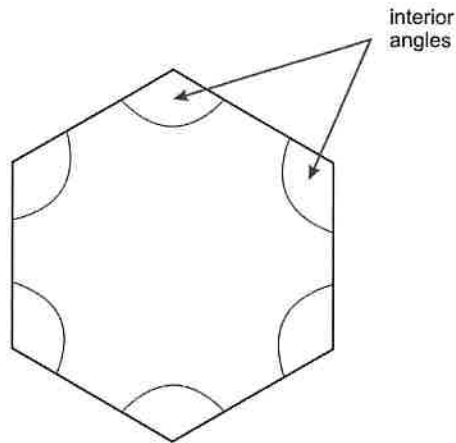
Pythagorean Theorem : $a^2 + b^2 = c^2$

Elements of a Regular Polygon, Sum of Interior Angles

Angles of Regular Polygons

Sum of the interior Angles $180(n-2)$

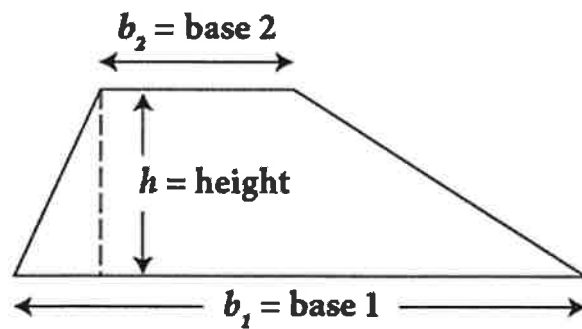
Sum of the Exterior Angles Always 360°



Elements of a Trapezoid

$$\text{Area of a Trapezoid} = \frac{h(b_1+b_2)}{2} \text{ units}^2$$

where h = height
 b_1 = length of base 1
 b_2 = length of base 2



Trapezoids

ALGEBRA

Multiplying and Dividing Numbers by Use of Exponents

$$A^5 \cdot A^7 = ? \quad A^{17} + A^8 = ?$$

Use of Decimals

$$3.66 \times 1.007$$

Convert a Linear Distance from a Fraction to a Decimal

$$57' 11\frac{3}{4}" = 57.98, \quad 11.75 / 12 = 0.98 = 57.98$$

Convert a Linear Distance from a Decimal to a Fraction

$$14.81' = 14' 9\frac{3}{4}" , \quad .81 \times 12 = 9.72 = 9" , \quad .72 \times 16 = 11.52 = 12/16 = 14' 9\frac{3}{4}"$$

Use of Ratio and Proportions

$$4/20 = ?/60$$

Subtracting Negative Numbers

$$\text{Subtract } -13.236 \text{ from } -15.418$$

Subtracting Unlike Algebraic Terms

$$\text{Subtract } 6x - 3y \text{ from } -4x + 4y$$

Factoring Quadratic Equations

$$A^2 + 9A - 36 = 0$$

Solving Quadratic Equations

$$\text{Solve for } A \text{ after factoring (above equation)}$$

Solving Simultaneous Equations by Subtraction or Addition:

$$\begin{array}{r} 16a - 14b = 76 \\ \underline{-8a - 18b = 12} \end{array}$$