

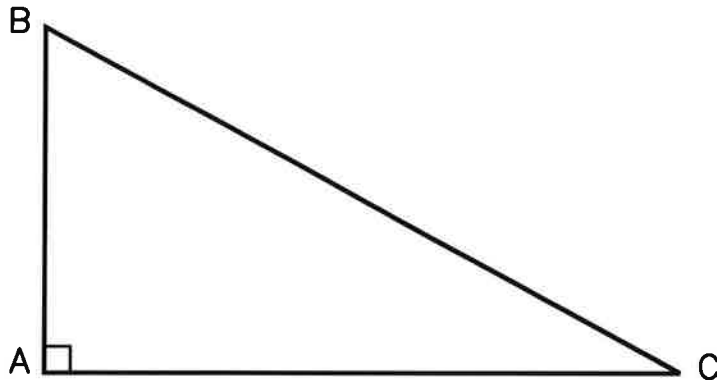


Sample Problems

Sponsored by the
National Society of Professional Surveyors

TRIG-STAR PROBLEM LOCAL CONTEST

PRINT NAME: _____



KNOWN: DISTANCE AC = 592.49 DISTANCE BC = 740.17

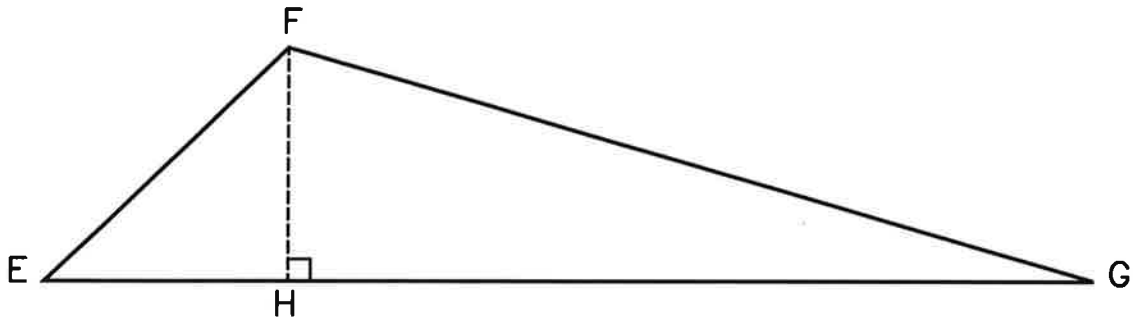
FIND: \angle ACB = _____ (5 POINTS)

DISTANCE AB = _____ (5 POINTS)

REQUIRED ANSWER FORMAT

DISTANCES: NEAREST HUNDREDTH
ANGLES: DEGREES-MINUTES-SECONDS
TO THE NEAREST SECOND

TRIG-STAR PROBLEM LOCAL CONTEST



KNOWN: DISTANCE EF = 388.05 \angle EFG = 114°11'45" \angle FEG = 42°47'40"

FIND: \angle EGF = _____ (6 POINTS)

DISTANCE EH = _____ (6 POINTS)

DISTANCE FH = _____ (6 POINTS)

DISTANCE FG = _____ (6 POINTS)

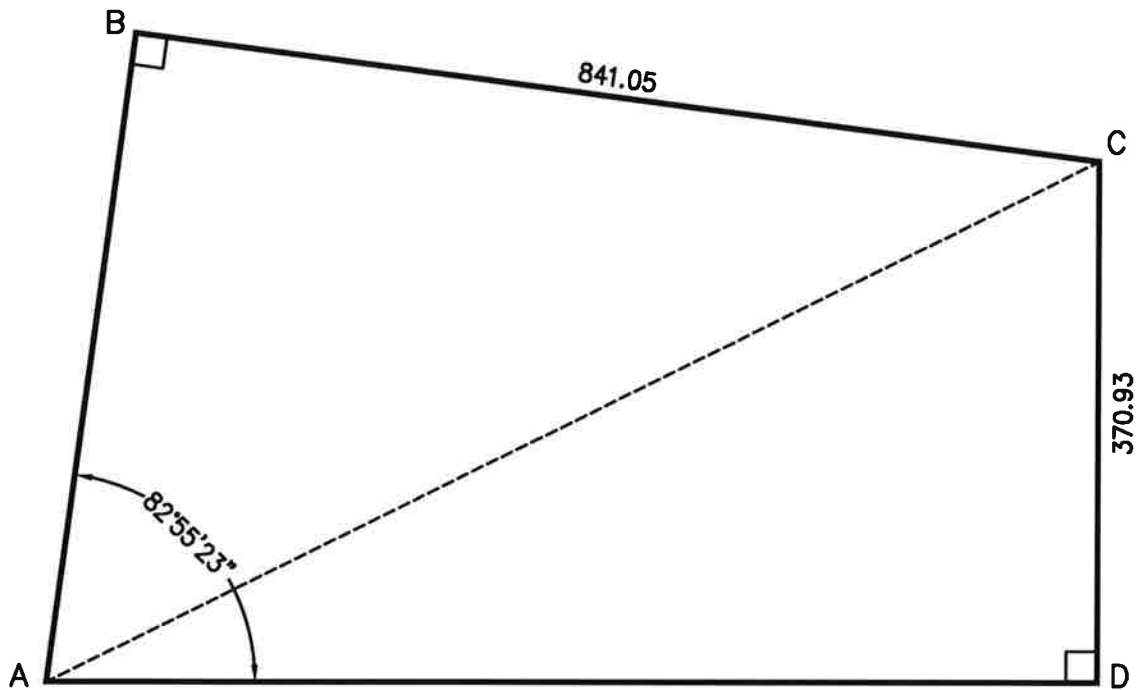
DISTANCE GH = _____ (6 POINTS)

REQUIRED ANSWER FORMAT

DISTANCES: NEAREST HUNDREDTH
ANGLES: DEGREES-MINUTES-SECONDS
TO THE NEAREST SECOND

PAGE TOTAL: _____ POINTS

TRIG-STAR PROBLEM LOCAL CONTEST



KNOWN: DISTANCE $BC = 841.05$ DISTANCE $CD = 370.93$
 $\angle BAD = 82^{\circ}55'23''$

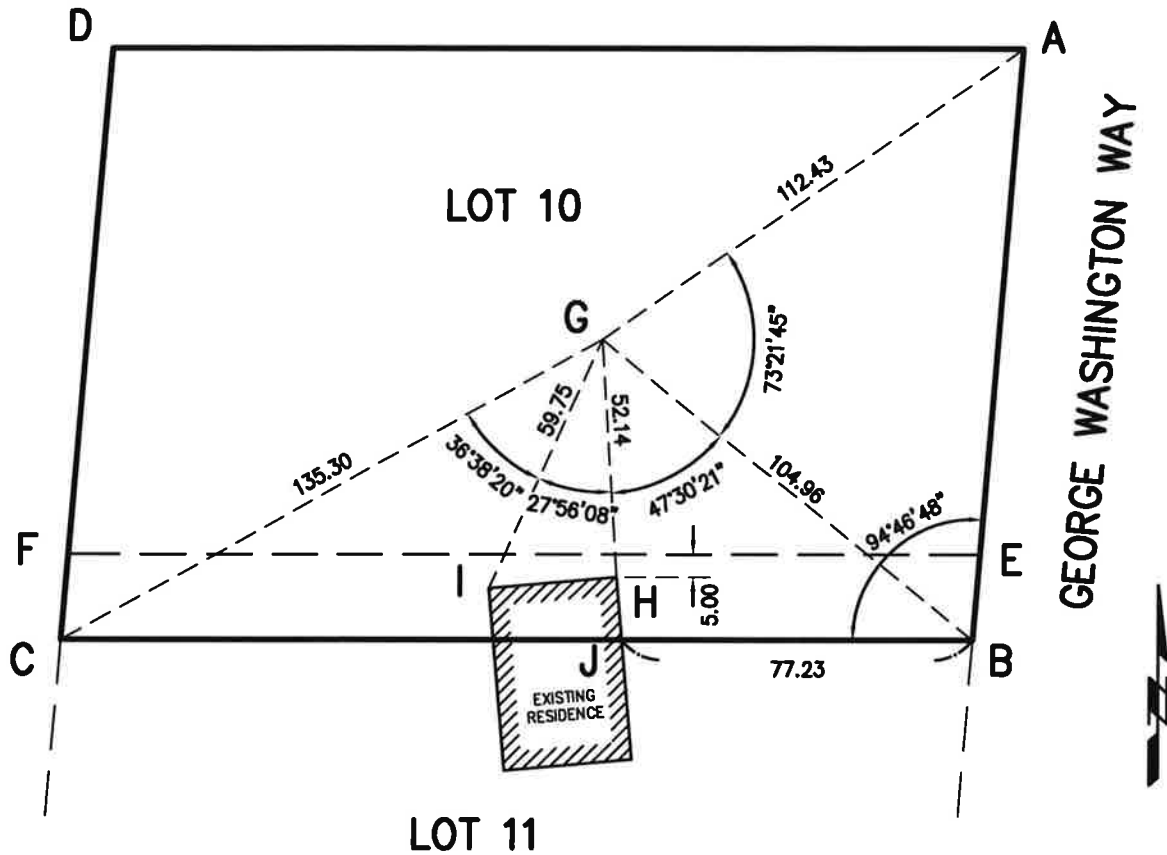
FIND: DISTANCE $AB =$ _____ (10 POINTS)
DISTANCE $AD =$ _____ (10 POINTS)
DISTANCE $AC =$ _____ (10 POINTS)

REQUIRED ANSWER FORMAT
DISTANCES: NEAREST HUNDREDTH

PAGE TOTAL: _____ POINTS

TRIG-STAR PROBLEM LOCAL CONTEST

THE OWNER OF LOT 10 IS PREPARING TO HAVE A HOUSE BUILT ON THE LOT. THE RESULTS OF A LAND SURVEY OF LOT 10 SHOWS THAT A PORTION OF THE EXISTING RESIDENCE THAT WAS BUILT FOR THE OWNER OF LOT 11 IS OVER THE LOT LINE. IT IS NECESSARY THAT A PORTION OF LOT 10 BE SOLD TO THE OWNER OF LOT 11. THE CITY REQUIRES THAT THE NEW LINE IS TO BE 5.00 FEET (BY PERPENDICULAR MEASUREMENT) FROM THE CLOSEST CORNER OF THE EXISTING RESIDENCE, AND THAT THE NEW LINE IS TO BE PARALLEL WITH THE SOUTH LINE OF LOT 10. THE SURVEYOR'S MEASURED ANGLES AND DISTANCES ARE SHOWN BELOW. (NOTE: LINE AD IS PARALLEL TO AND EQUAL IN DISTANCE TO LINE BC.)



DISTANCE GA = 112.43 DISTANCE GB = 104.96 DISTANCE GH = 52.14
 DISTANCE GI = 59.75 DISTANCE GC = 135.30 DISTANCE BJ = 77.23
 ANGLE ABC = 94°46'48" ANGLE BGA = 73°21'45" ANGLE HGB = 47°30'21"
 ANGLE IGH = 27°56'08" ANGLE CGI = 36°38'20"

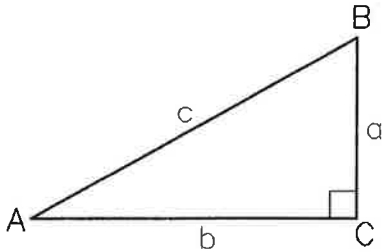
- DISTANCE AB = _____ (6 POINTS)
- DISTANCE BC = _____ (6 POINTS)
- DISTANCE HI = _____ (6 POINTS)
- DISTANCE BE = _____ (6 POINTS)
- AREA BCFE = _____ (6 POINTS)

REQUIRED ANSWER FORMAT
 DISTANCES: NEAREST HUNDREDTH
 AREA: NEAREST FULL UNIT

PAGE TOTAL: _____ POINTS

TRIG-STAR MISCELLANEOUS DATA

RIGHT TRIANGLE FORMULAS



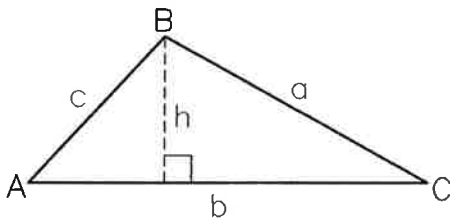
PYTHAGOREAN THEOREM: $a^2 + b^2 = c^2$

AREA: $\frac{1}{2}ab$

TRIGONOMETRIC FUNCTIONS: $\sin A = \frac{a}{c}$, $\cos A = \frac{b}{c}$,

$\tan A = \frac{a}{b}$

OBLIQUE TRIANGLE FORMULAS

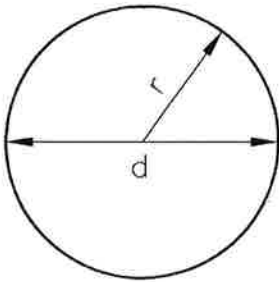


LAW OF SINES: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

LAW OF COSINES: $a^2 = b^2 + c^2 - 2bc \cos A$

AREA: $\frac{1}{2}bh$

CIRCLE FORMULAS



DIAMETER = d RADIUS = r

CIRCUMFERENCE: $2\pi r$ or πd

AREA: πr^2

ONE DEGREE (1°) OF ARC = 60 MINUTES ($60'$) OF ARC

ONE MINUTE ($1'$) OF ARC = 60 SECONDS ($60''$) OF ARC

THEREFORE ONE DEGREE OF ARC (1°) = 3600 SECONDS OF ARC.

TRIG-STAR ANSWER KEY LOCAL CONTEST

PAGE 1

$$\sphericalangle ACB = \boxed{36^{\circ}49'27''}$$

$$\text{DISTANCE AB} = \boxed{443.63}$$

PAGE 1

$$\sphericalangle EGF = \boxed{23^{\circ}00'35''}$$

$$\text{DISTANCE EH} = \boxed{284.75}$$

$$\text{DISTANCE FH} = \boxed{263.63}$$

$$\text{DISTANCE FG} = \boxed{674.44}$$

$$\text{DISTANCE GH} = \boxed{620.78}$$

PAGE 2

$$\text{DISTANCE AB} = \boxed{478.19}$$

$$\text{DISTANCE AD} = \boxed{893.56}$$

$$\text{DISTANCE AC} = \boxed{967.49}$$

PAGE 3

$$\text{DISTANCE AB} = \boxed{130.00}$$

$$\text{DISTANCE BC} = \boxed{200.00}$$

$$\text{DISTANCE HI} = \boxed{28.00}$$

$$\text{DISTANCE BE} = \boxed{18.83}$$

$$\text{AREA BCFE} = \boxed{3,753}$$