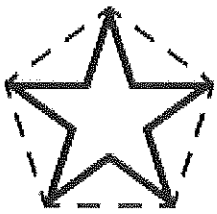


TRIG-STAR

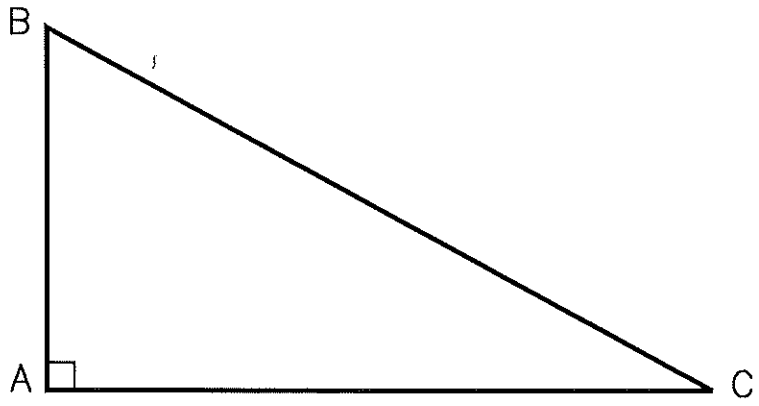
2021-2022
Sample Problems

NSPS

Sponsored by
National Society of Professional Surveyors

TRIG–STAR PROBLEM LOCAL CONTEST

PRINT NAME: _____



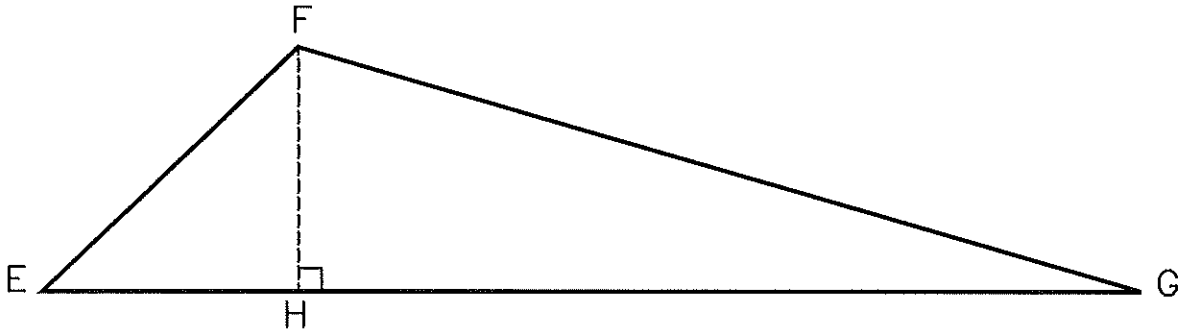
KNOWN: DISTANCE AB = 260.19 DISTANCE BC = 490.49

FIND: ∠CBA = _____ (5 POINTS)

DISTANCE AC = _____ (5 POINTS)

REQUIRED ANSWER FORMAT
DISTANCES: NEAREST HUNDREDTH
ANGLES: DEGREES–MINUTES–SECONDS TO THE NEAREST SECOND

TRIG–STAR PROBLEM LOCAL CONTEST



KNOWN: DISTANCE EF = 319.89 ∠EFG = 121°19'12" ∠FEG = 41°45'36"

FIND: ∠EGF = _____ (6 POINTS)

DISTANCE EH = _____ (6 POINTS)

DISTANCE FH = _____ (6 POINTS)

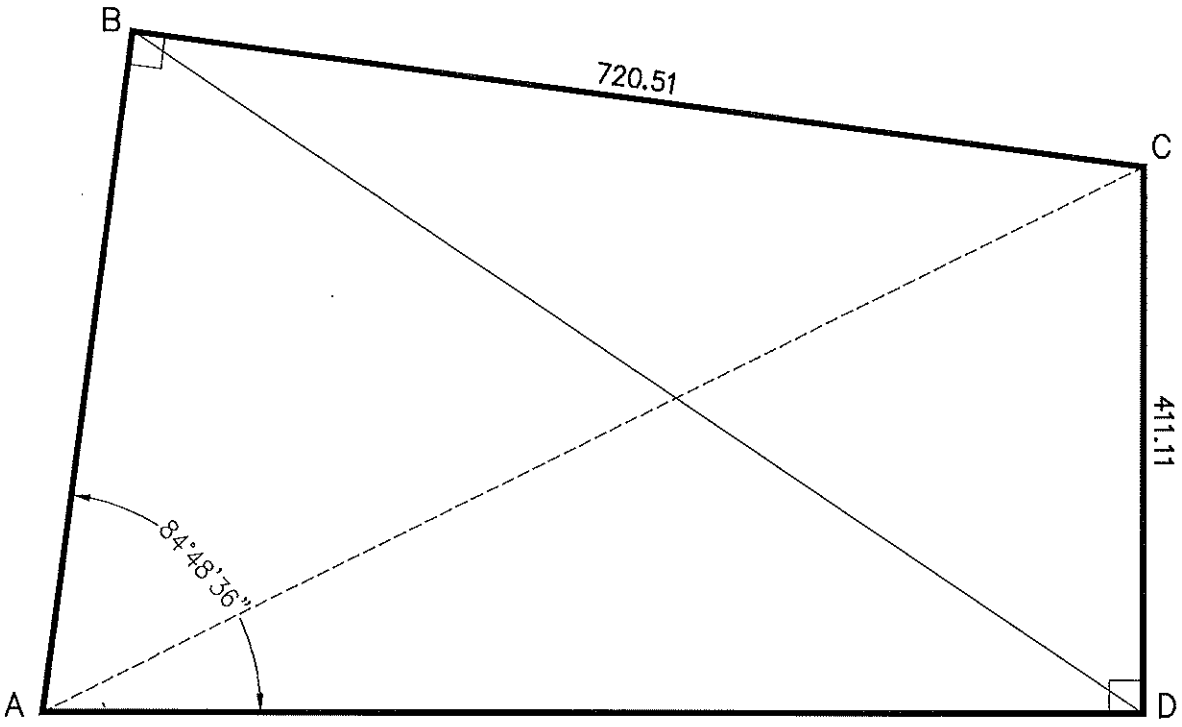
DISTANCE FG = _____ (6 POINTS)

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 = 720.51 DISTANCE CD = 411.11
∠BAD = 84°48'36"

FIND: DISTANCE AB = _____ (10 POINTS)

DISTANCE AD = _____ (10 POINTS)

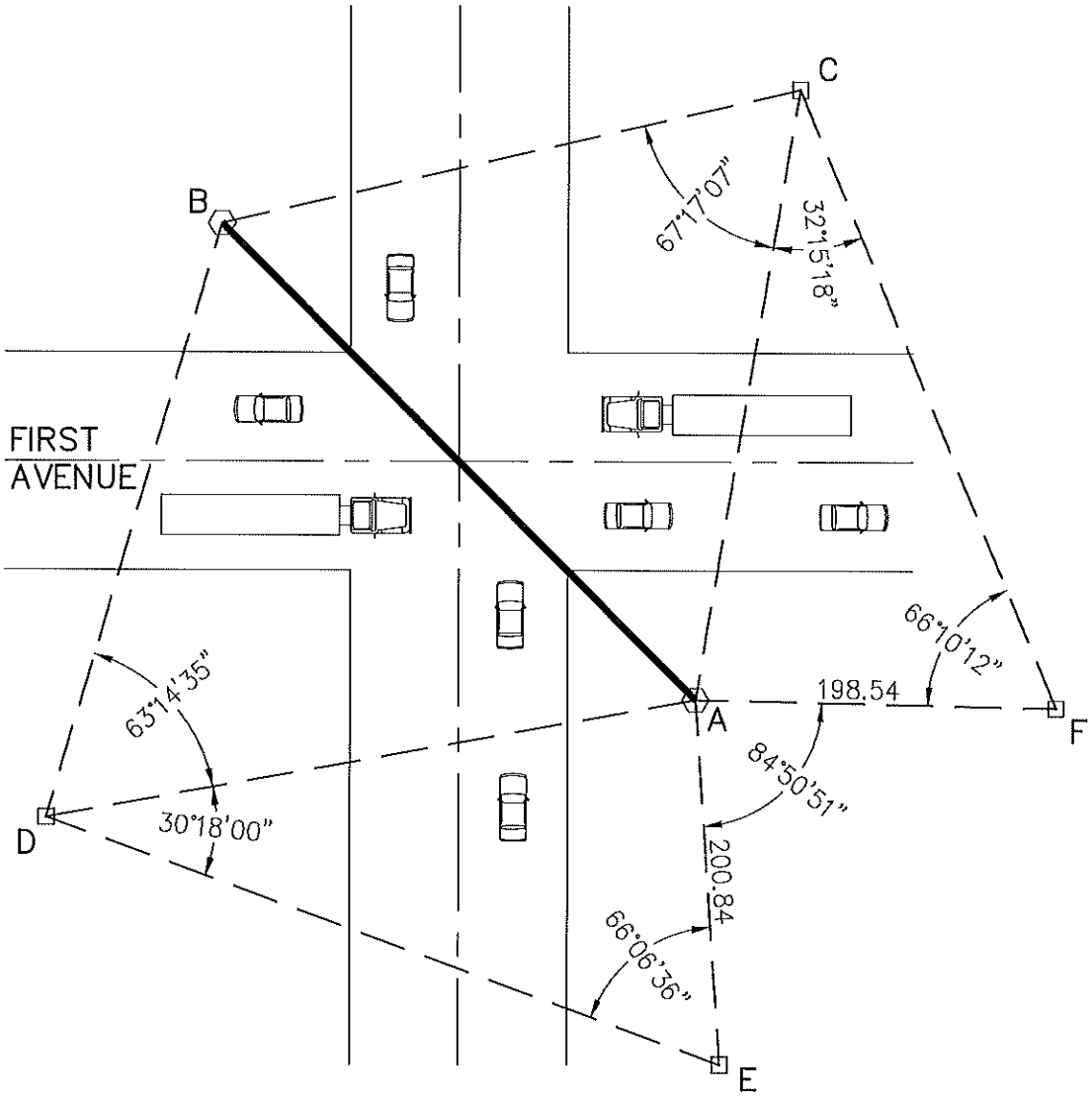
DISTANCE AC = _____ (10 POINTS)

REQUIRED ANSWER FORMAT
DISTANCES: NEAREST HUNDREDTH

PAGE TOTAL: _____ POINTS

TRIG–STAR PROBLEM LOCAL CONTEST

A LOCAL TRAFFIC ENGINEERING DEPARTMENT HAS DETERMINED THE NEED FOR AN OVERHEAD SIGNAL LIGHT SYSTEM AT A VERY BUSY INTERSECTION. THE SUPPORT POLES NEED TO BE PLACED AT POINTS A AND B. DUE TO HEAVY TRAFFIC VOLUME, THE FIELD MEASUREMENTS BY THE SURVEY CREW WERE LIMITED TO THE FOLLOWING SKETCH:



FIND:

DISTANCE AC = _____ (6 POINTS)

DISTANCE AD = _____ (6 POINTS)

DISTANCE DC = _____ (6 POINTS)

DISTANCE BC = _____ (6 POINTS)

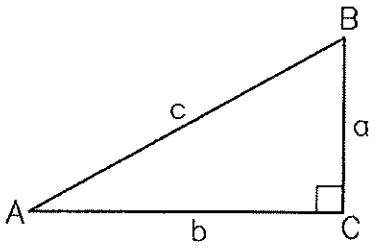
DISTANCE AB = _____ (6 POINTS)

REQUIRED ANSWER FORMAT
DISTANCES: NEAREST HUNDREDTH

PAGE TOTAL: _____ POINTS

TRIG-STAR MISCELLANEOUS DATA

RIGHT TRIANGLE FORMULAS



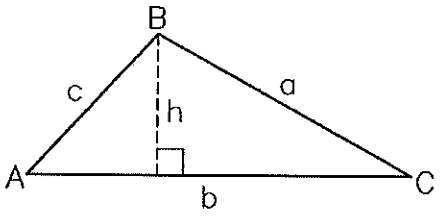
PYTHAGOREAN THEOREM: $a^2 + b^2 = c^2$

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

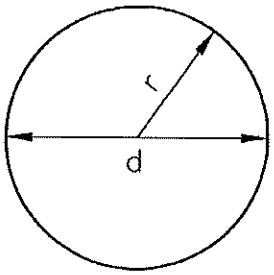


LAW OF SINES: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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

∠ CBA =	57°57'46"
DISTANCE AC =	415.79

PAGE 1

∠ EGF =	16°55'12"
DISTANCE EH =	238.62
DISTANCE FH =	213.05
DISTANCE FG =	732.04
DISTANCE GH =	700.35

PAGE 2

DISTANCE AB =	478.25
DISTANCE AD =	760.82
DISTANCE AC =	864.79

PAGE 3

DISTANCE AC =	340.30
DISTANCE AD =	363.97
DISTANCE DC =	577.02
DISTANCE BC =	327.27
DISTANCE AB =	370.00

POLICY ON GRADING:

THE CORRECT ANSWER IS THE ANSWER LISTED ABOVE. ANSWERS WHICH EITHER VARY FROM THE EXACT ANSWER OR ARE NOT TO THE SAME PRECISION ARE INCORRECT FOR THE PURPOSE OF THIS CONTEST. NO PARTIAL CREDIT IS TO BE GRANTED.