NSPS

2018-2019

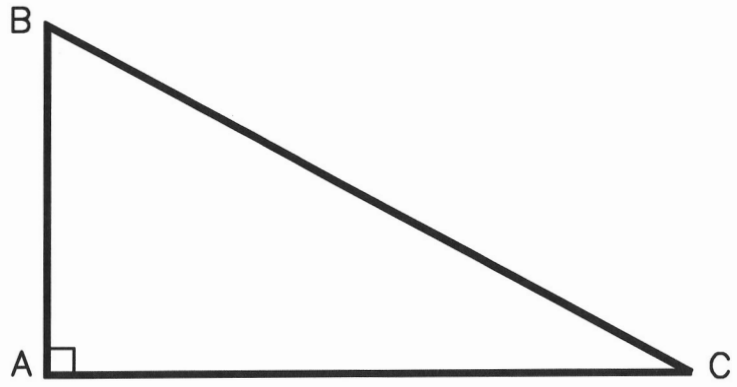
TRIG-STAR

Sample Problems

Sponsored by
National Society of Professional Surveyors

TRIG–STAR PROBLEM LOCAL CONTEST

PRINT NAME: _____



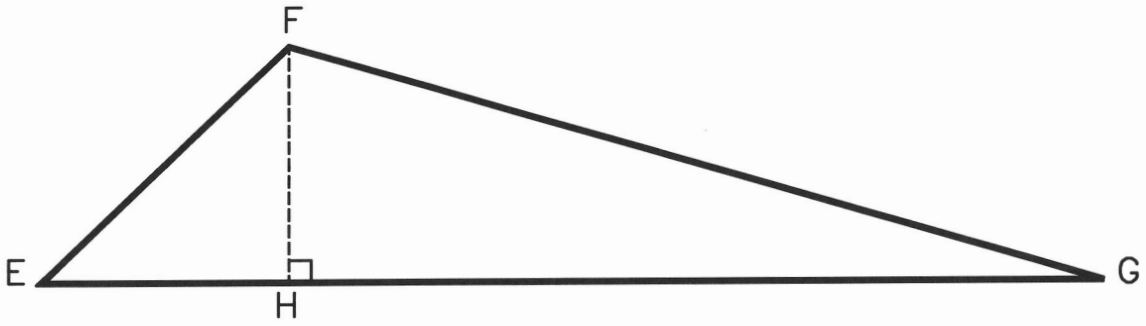
KNOWN: DISTANCE AC = 752.05 DISTANCE BC = 1044.50

FIND: ∠ 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 = 297.98 ∠ EFG = 112°51'15" ∠ FEG = 44°29'20"

FIND: ∠ EGF = _____ (6 POINTS)

DISTANCE EH = _____ (6 POINTS)

DISTANCE FH = _____ (6 POINTS)

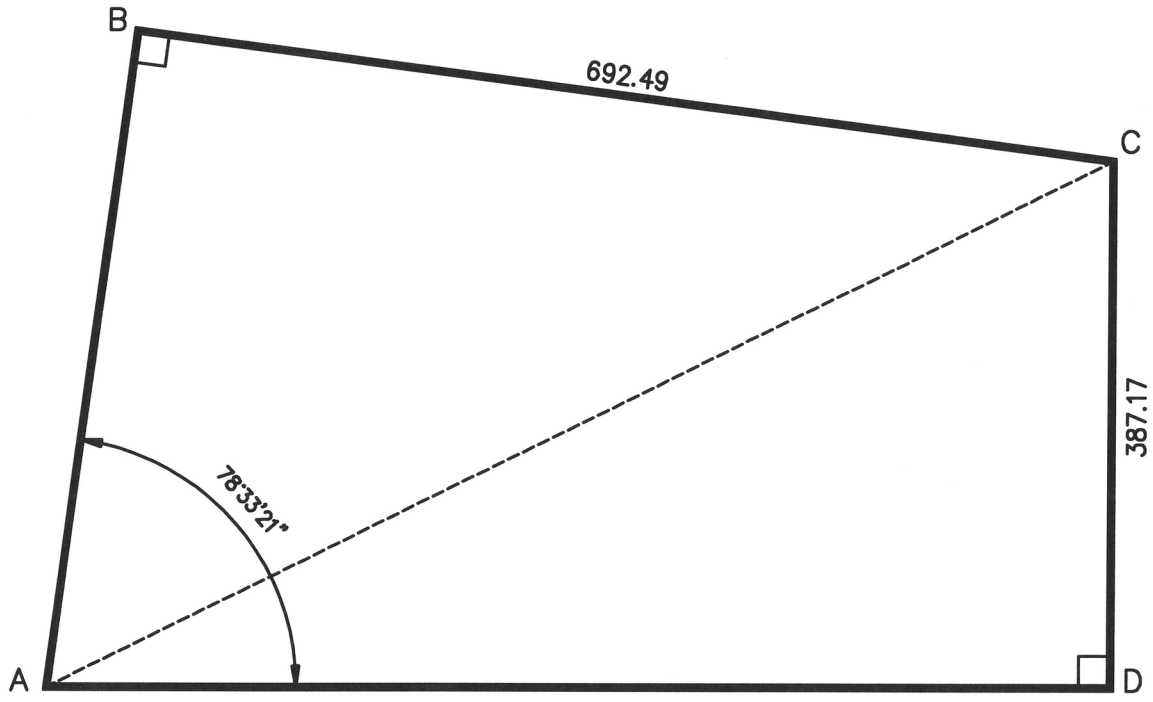
DISTANCE FG = _____ (6 POINTS)

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 = 692.49 DISTANCE CD = 387.17
$\measuredangle$ BAD = 78°33'21"

FIND: DISTANCE AB = _____ (10 POINTS)

DISTANCE AD = _____ (10 POINTS)

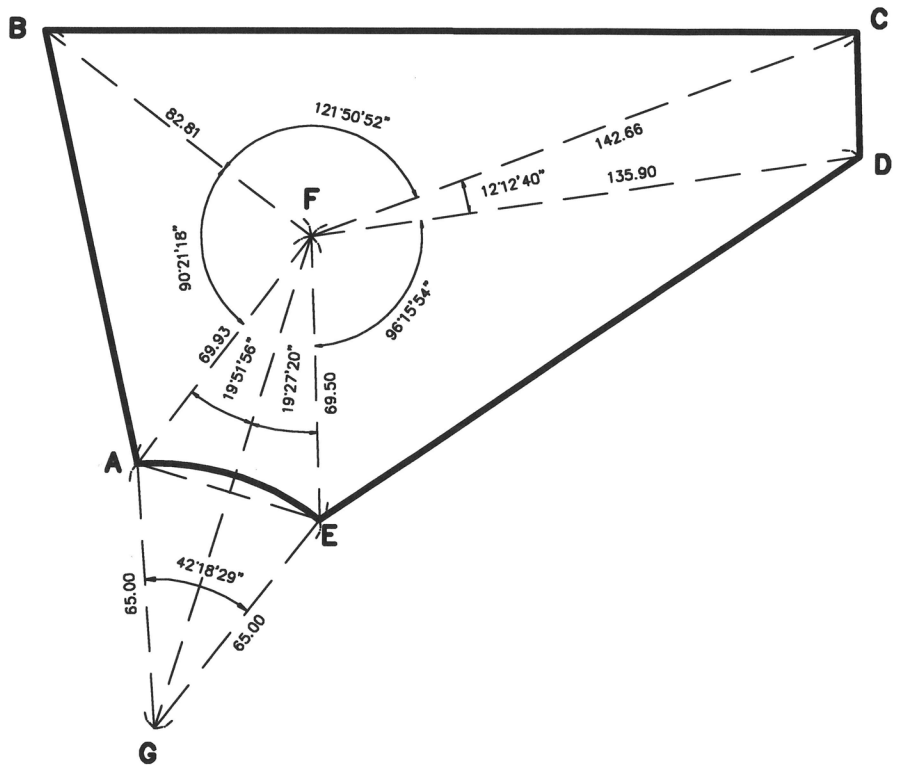
DISTANCE AC = _____ (10 POINTS)

REQUIRED ANSWER FORMAT
DISTANCES: NEAREST HUNDREDTH

PAGE TOTAL: _____ POINTS

TRIG–STAR PROBLEM LOCAL CONTEST

ABC HOME CONSTRUCTION COMPANY HAS BEEN HIRED TO BUILD A NEW HOUSE ON LOT 22, AND HAS HIRED A SURVEYOR TO SURVEY THE LOT. THE SURVEYOR'S FIELD MEASUREMENTS ARE AS SHOWN. DETERMINE THE REQUIRED LOT DIMENSIONS BASED ON THE GIVEN FIELD MEASUREMENTS.



GIVEN: DISTANCE GA = DISTANCE GE = 65.00 ANGLE AGE = 42°18'29"
DISTANCE FA = 69.93 DISTANCE FB = 82.81 DISTANCE FC = 142.66
DISTANCE FD = 135.90 DISTANCE FE = 69.50 ANGLE AFB = 90°21'18"
ANGLE BFC = 121°50'52" ANGLE CFD = 12°12'40" ANGLE DFE = 96°15'54"
ANGLE AFG = 19°51'56" ANGLE GFE = 19°27'20"

FIND: ARC LENGTH AE = _____ (6 POINTS)

DISTANCE AB = _____ (6 POINTS)

DISTANCE BC = _____ (6 POINTS)

DISTANCE DE = _____ (6 POINTS)

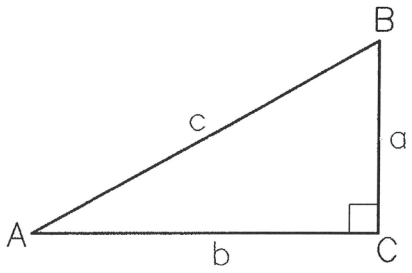
CHORD LENGTH AE = _____ (6 POINTS)

PAGE TOTAL: _____ POINTS

REQUIRED ANSWER FORMAT
DISTANCES: NEAREST HUNDREDTH

TRIG-STAR MISCELLANEOUS DATA

RIGHT TRIANGLE FORMULAS



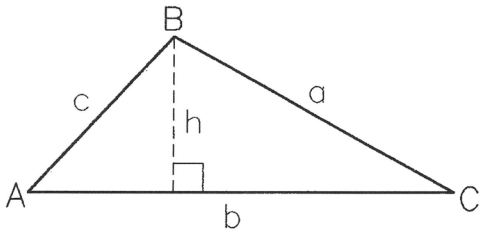
PYTHAGOREAN THEOREM: $a^2 + b^2 = c^2$

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

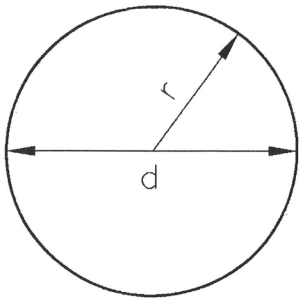


LAW OF SINES: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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

∠ ACB =	43°56'41"
DISTANCE AB =	724.85

PAGE 1

∠ EGF =	22°39'25"
DISTANCE EH =	212.57
DISTANCE FH =	208.82
DISTANCE FG =	542.08
DISTANCE GH =	500.25

PAGE 2

DISTANCE AB =	535.21
DISTANCE AD =	784.91
DISTANCE AC =	875.21

PAGE 3

ARC LENGTH AE =	48.00
DISTANCE AB =	108.72
DISTANCE BC =	199.19
DISTANCE DE =	159.25
CHORD LENGTH AE =	46.91