TRIG★STAR

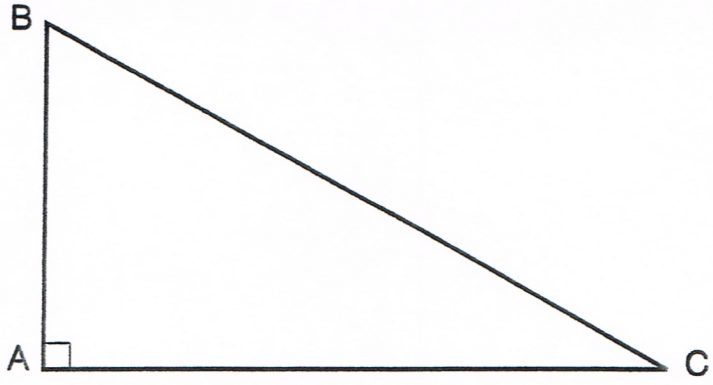
2011-2012

SAMPLE PROBLEMS

Sponsored by the National Society of Professional Surveyors

TRIG-STAR PROBLEM LOCAL CONTEST

PRINT NAME: _____



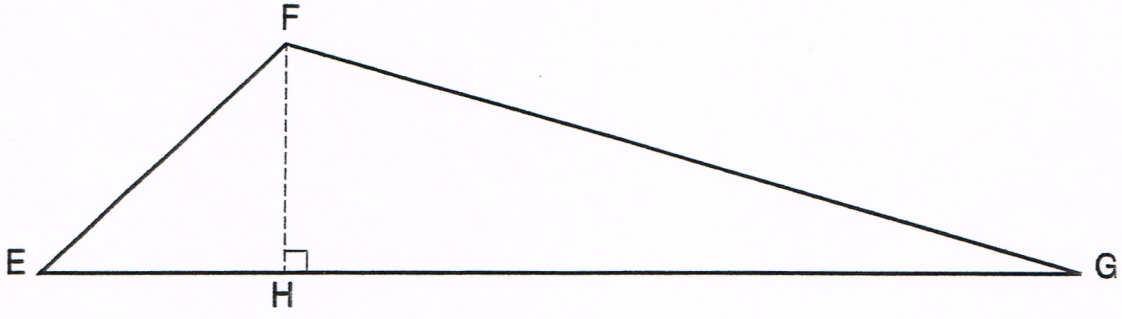
KNOWN: DISTANCE AB = 178.20 DISTANCE BC = 373.58

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 = 188.58 ∡ EFG = 121°25'12" ∡ FEG = 41°57'27"

FIND: ∡ EGF = _____ (6 POINTS)

DISTANCE EH = _____ (6 POINTS)

DISTANCE FH = _____ (6 POINTS)

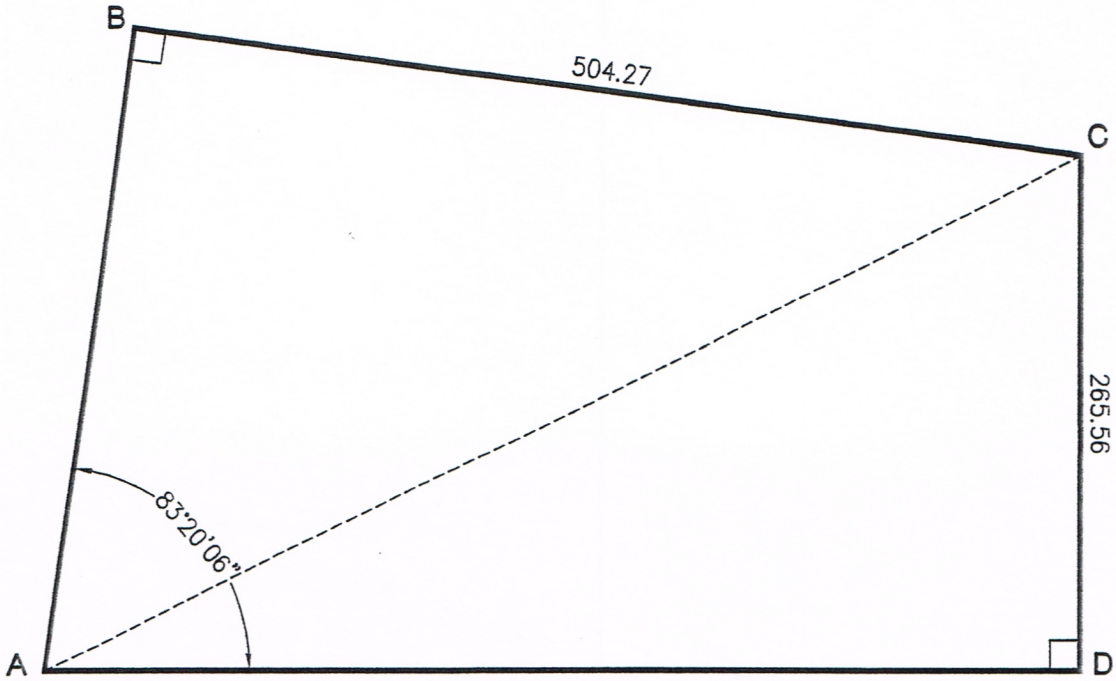
DISTANCE FG = _____ (6 POINTS)

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 = 504.27 DISTANCE CD = 265.56
$\measuredangle$ BAD = 83°20'06"

FIND: DISTANCE AB = _____ (10 POINTS)

DISTANCE AD = _____ (10 POINTS)

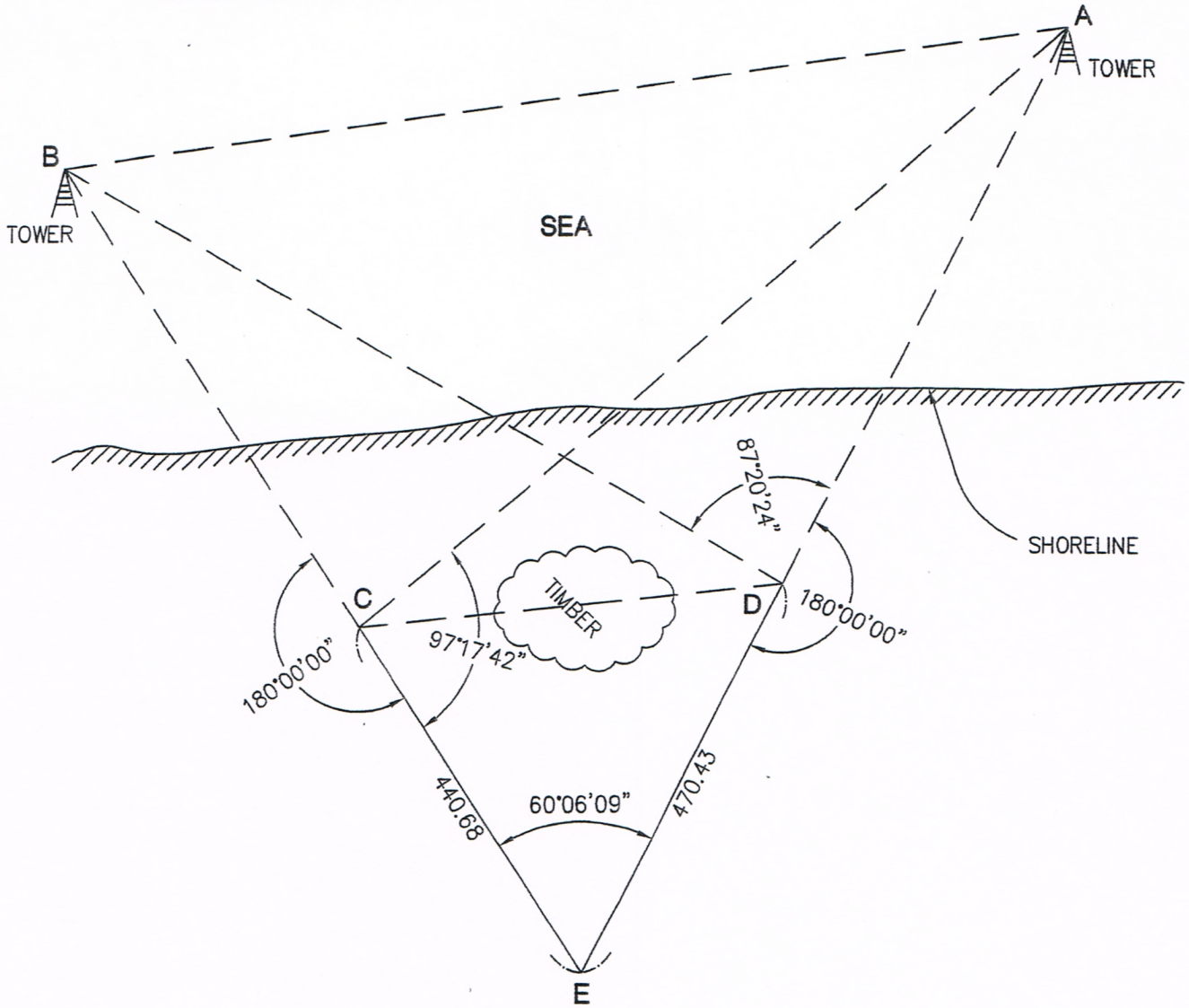
DISTANCE AC = _____ (10 POINTS)

REQUIRED ANSWER FORMAT
DISTANCES: NEAREST HUNDREDTH

PAGE TOTAL: _____ POINTS

TRIG-STAR PROBLEM LOCAL CONTEST

THE GOVERNMENT HAS CONSTRUCTED OFFSHORE COMMUNICATION TOWERS TO HELP MONITOR THE COASTAL WATERS. A FIBER OPTIC CABLE NEEDS TO BE CONNECTED FROM THE POINTS ON LAND TO THE TOWERS FOR INCREASED SECURITY. THIS CABLE WILL ENABLE THE TOWERS TO TRANSMIT MORE INFORMATION QUICKER, FOR SURVEILANCE AND ENVIRONMENTAL PURPOSES.



FIND:

DISTANCE AC = _____ (4 POINTS)

DISTANCE AD = _____ (5 POINTS)

DISTANCE BD = _____ (4 POINTS)

DISTANCE BC = _____ (5 POINTS)

DISTANCE CD = _____ (5 POINTS)

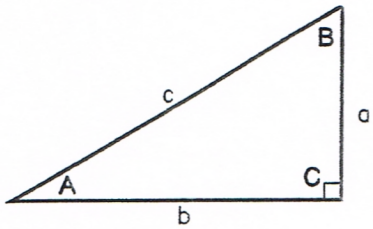
DISTANCE AB = _____ (7 POINTS)

PAGE TOTAL: _____ POINTS

REQUIRED ANSWER FORMAT
DISTANCES: NEAREST HUNDREDTH

TRIG-STAR MISCELLANEOUS DATA

RIGHT TRIANGLE FORMULAS



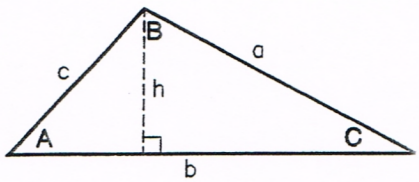
PYTHAGOREAN THEOREM: $a^2 + b^2 = c^2$

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

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

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

OBLIQUE TRIANGLE FORMULAS

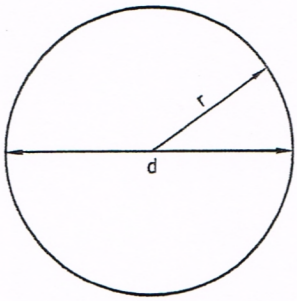


LAW OF SINES: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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 =	61°30'36"
DISTANCE AC =	328.34

PAGE 1

∡ EGF =	16°37'21"
DISTANCE EH =	140.24
DISTANCE FH =	126.08
DISTANCE FG =	440.74
DISTANCE GH =	422.32

PAGE 2

DISTANCE AB =	326.29
DISTANCE AD =	538.73
DISTANCE AC =	600.63

PAGE 3

DISTANCE AC =	994.01
DISTANCE AD =	666.89
DISTANCE BD =	891.07
DISTANCE BC =	586.07
DISTANCE CD =	456.99
DISTANCE AB =	1087.93