SOML MEET 3 **NAME: _____**
EVENT 1 **TEAM: _____**
Applications of Geometry **SCHOOL: _____**

1. [2 Points] A standard, diamond-shaped kite is 32 inches wide and 42 inches long. What is its area?

ANS: _____ in^2

2. [3 Points] What angle, in degrees, is formed by the hands of a clock at 1:20?

ANS: _____ degrees

3. [5 Points] Starting at his own house, Al can reach Bob's house by walking 3 miles south and then going 9 miles east. Bob can reach Carl's house simply by going north. If Al and Bob live exactly the same distance from Carl, what is that distance?

ANS: _____ miles

SOML MEET 3 **NAME: KEY**
EVENT 1 **TEAM: _____**
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1. [2 Points] A standard, diamond-shaped kite is 32 inches wide and 42 inches long. What is its area?

Solution: Split the kite into two congruent triangles. Each will have a base of 42 inches and a height of 16 inches. Thus, the area of each will be $\frac{1}{2}\cdot 16\cdot 42$. Since there will be two such triangles, the combined area will be $1\cdot 16\cdot 42$, or 672 square inches.

ANS: **672** in^2

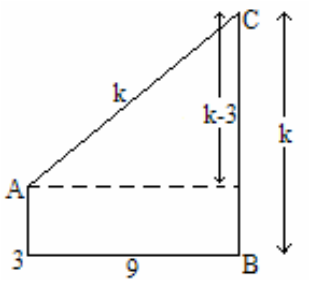
2. [3 Points] What angle, in degrees, is formed by the hands of a clock at 1:20?

Solution: First, note that each hand sweeps out a 30^o angle in passing from one number on the clock to the next. At 1:20, the hour hand is one-third of the way from the 1 to the 2. The minute hand is pointing at the 4. If the hour hand were pointing at the 1 while the minute hand is pointing at the 4, the angle formed would be 90^o. However, the hour hand would actually be one-third of the way from the 1 to the 2, reducing the angle by 10^o. At 1:20, the angles form an angle measuring 80^o.

ANS: **80** degrees

3. [5 Points] Starting at his own house, Al can reach Bob's house by walking 3 miles south and then going 9 miles east. Bob can reach Carl's house simply by going north. If Al and Bob live exactly the same distance from Carl, what is that distance?

Solution: Let k = the distance between Al's house and Carl's (and also between Bob's house and Carl's)



By the Pythagorean Theorem, $(k-3)^2+9^2=k^2$

Therefore, $\left(k^2-6k+9\right)+81=k^2$

Solve this equation: $90=6k$

$90/6=k$

$15=k$

ANS: **15** miles