PSSA Open Ended Prep – Geometry #3

Please read the given situation carefully. Then, answer each question that follows. If you are asked to EXPLAIN something, please do so using COMPLETE SENTENCES!

Situation:

Farmer Brown wants to put a fence around a triangular shaped field. A rectangular barn is directly next to the field. A diagram is below:

```
  35 yd
  
  BARN  30
  
  FIELD
  
  35
  ⟷ 72 yd ⟷
  
  30 yd
```

Part A) How long is each side of the field? **Show all work.** **EXPLAIN** what you did and why.

Because the barn is rectangular, the short side of the field is 30 yards (just like the right side of the barn).

Then, I used the Pythagorean Theorem to find the longest side of the field.

It is 78 yards long.

\[
\begin{align*}
  a^2 + b^2 &= c^2 \\
  30^2 + 72^2 &= c^2 \\
  900 + 5184 &= c^2 \\
  6084 &= c^2 \\
  78 &= c \quad \text{Square root!}
\end{align*}
\]

30 yd, 72 yd, 78 yd
Part B) Farmer brown is not going to put fencing along the side of the field that is right next to the barn, but will along the other two sides. The fencing will cost him $3.79 per foot. What will be the cost of the fencing? **Show all work. EXPLAIN** what you did and why.

\[
\begin{array}{c}
78 \\
+72 \\
\hline
150 \text{ yd}
\end{array}
\]

\[
\begin{array}{c}
150 \\
x 3 \\
\hline
450 \text{ ft}
\end{array}
\]

\[
\begin{array}{c}
\text{I added the lengths of the two sides of the field (3rd side doesn't need fencing), and then converted that total into feet.}
\end{array}
\]

\[
\begin{array}{c}
\text{Then I multiplied the total length in feet by the cost per foot to get a cost of}
\end{array}
\]

\[
\begin{array}{c}
\$1,705.50
\end{array}
\]

Part C) Farmer Brown wants to buy fertilizer for the field. What is the area of the field? **Show all work.**

\[
A = \frac{1}{2}bh
\]

\[
A = \frac{1}{2}(72)(30)
\]

\[
A = 36(30)
\]

\[
A = \boxed{1,080 \text{ yd}^2}
\]