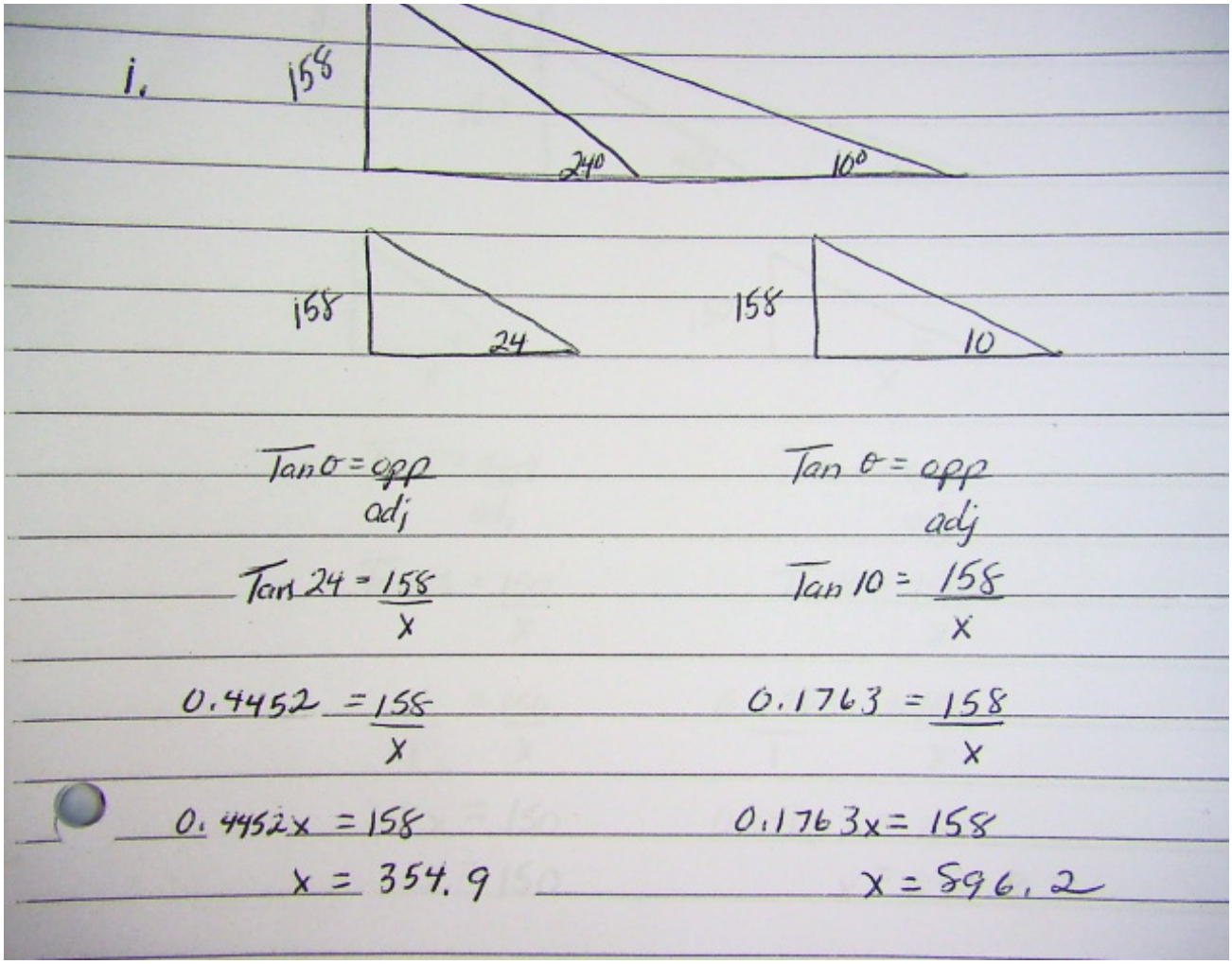
i.



$\tan\theta = \frac{opp}{adj}$

$\tan 24 = \frac{158}{x}$

$0.4452 = \frac{158}{x}$

$0.4452x = 158$

$x = 354.9$

$\tan\theta = \frac{opp}{adj}$

$\tan 10 = \frac{158}{x}$

$0.1763 = \frac{158}{x}$

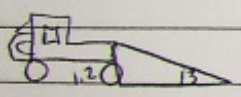
$0.1763x = 158$

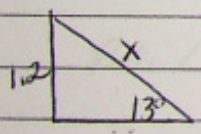
$x = 896.2$

896.2
−354.9
541.3

The ships are 541.3m apart

2.





$\sin\theta = \frac{opp}{hyp}$

$\sin 13 = \frac{1.2}{x}$

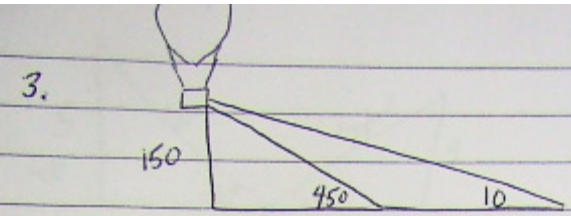
$0.2250 = \frac{1.2}{x}$

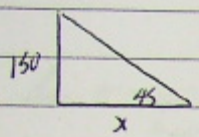
$0.2250x = 1.2$

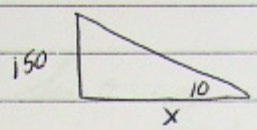
$x = 5.3$

The ramp is 5.3m long.

3.







$\tan\theta = \frac{opp}{adj}$ $\tan\theta = \frac{opp}{adj}$

$\tan 45 = \frac{150}{x}$ $\tan 10 = \frac{150}{x}$

$\frac{1}{1} = \frac{150}{x}$ $\frac{0.1763}{1} = \frac{150}{x}$

$1x = 150$ $0.1763x = 150$

$x = 150$ $x = 850.8$

850.8

-150

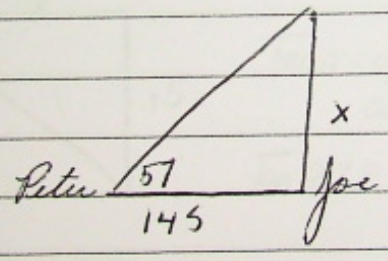
700.8

The bikes are 700.8m apart.

-150

700.8

4.



$\tan\theta = \frac{opp}{adj}$

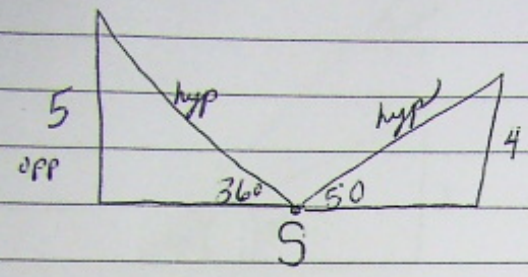
$\tan 57 = \frac{x}{145}$

$\frac{1.5399}{1} = \frac{x}{145}$

$x = 223.3$

The plane is 223.3m high.

5.



$\sin\theta = \frac{opp}{hyp}$

$\sin 36^\circ = \frac{5}{x}$

$\frac{0.5878}{1} = \frac{5}{x}$

$0.5878x = 5$

$x = 8.5$

$\sin\theta = \frac{opp}{hyp}$

$\sin 50 = \frac{4}{x}$

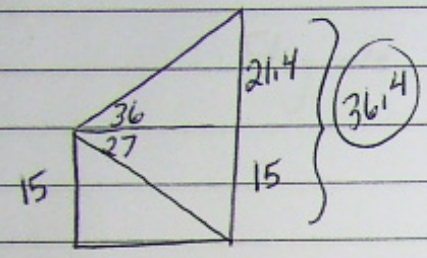
$\frac{0.7660}{1} = \frac{4}{x}$

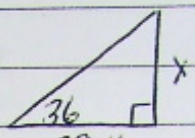
$0.7660\,x = 4$

$x = 5.2$

Superman will save the person to his left (The girl!!)

6.



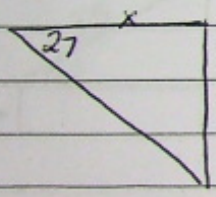


$\tan\theta = \frac{opp}{adj}$

$\tan 36 = \frac{x}{29.4}$

$0.7265 = \frac{x}{29.4}$

$x = 21.4$



$\tan\theta = \frac{opp}{adj}$

$\tan 27 = \frac{15}{x}$

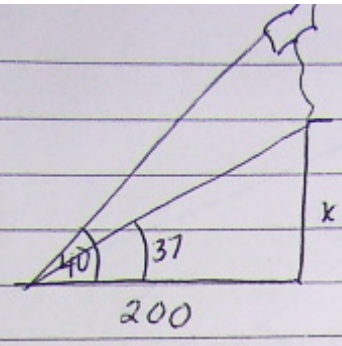
$0.5095 = \frac{15}{x}$

$0.5095x = 15$

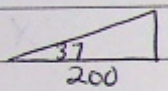
$x = 29.4$

The building is 36.14m high.

7.



Building:



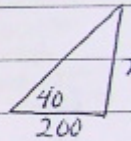
$\tan\theta = \frac{opp}{adj}$

$\tan 37 = \frac{x}{200}$

$0.7536 = \frac{x}{200}$

$x = 150.7$

Top of flagpole:



$\tan\theta = \frac{opp}{adj}$

$\tan 40 = \frac{x}{200}$

$0.8391 = \frac{x}{200}$

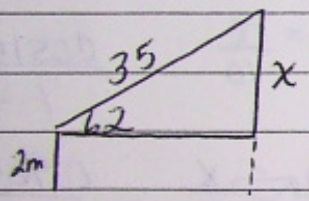
$x = 167.8$

Flagpole: $167.8 - 150.7 = 17.1$

150.1

17.1

8.



$\sin\theta = \frac{opp}{hyp}$

$\sin 62 = \frac{x}{35}$

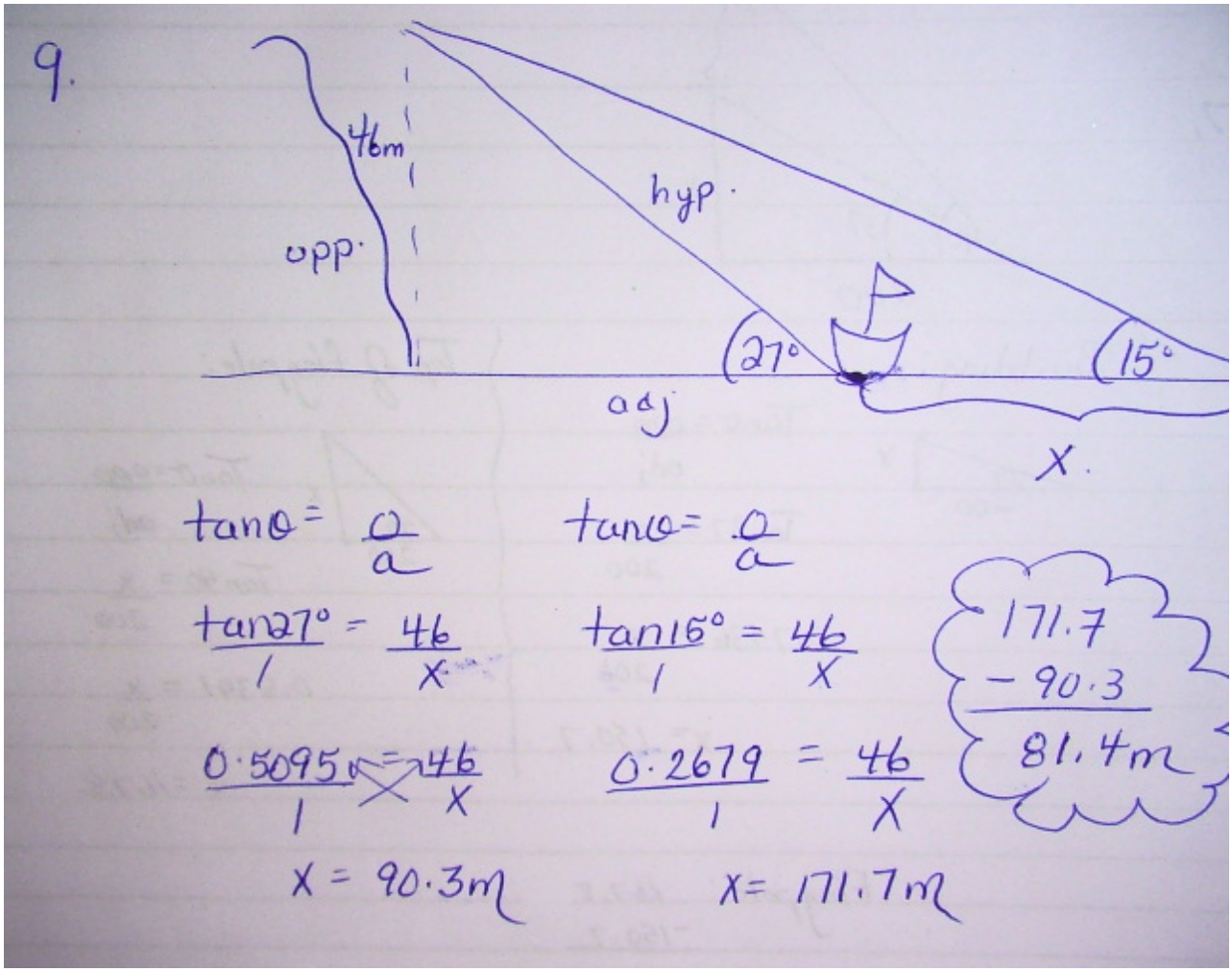
$0.8829 = \frac{x}{35}$

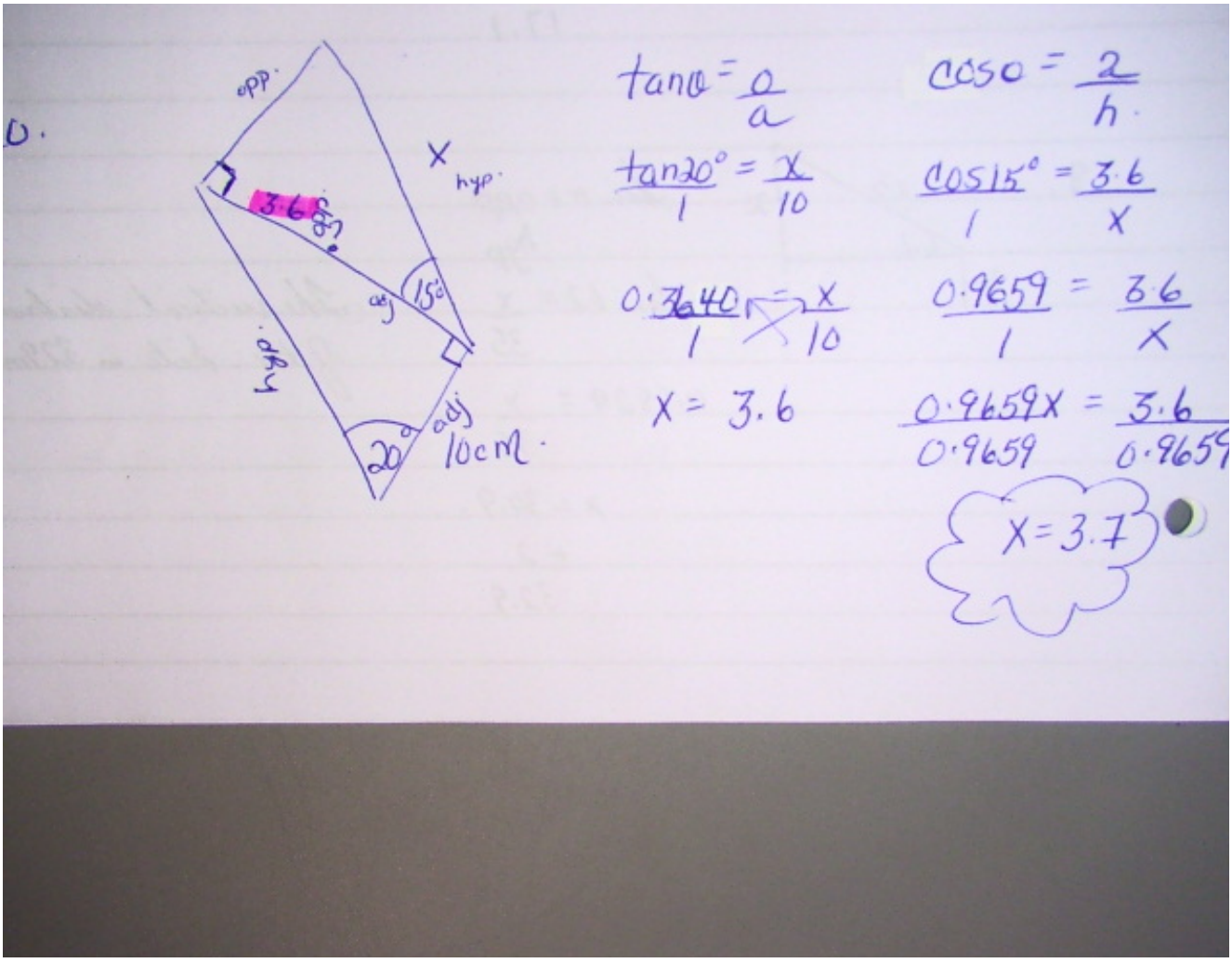
$x = 30.9$.

$+2$

32.9

The vertical distance of the kite is 32.9m.


9.
46m
hyp.
opp.
27°
15°
adj
X.
tanθ = o/a
tanθ = o/a
tan27° = 46/x
tan15° = 46/x
0.5095 = 46/x
0.2679 = 46/x
x = 90.3m
x = 171.7m
171.7
- 90.3
81.4m


b.
opp.
X
hyp.
3.6
adj
15°
hyp.
adj
20°
10cm.
tanθ = o/a
tan20° = X/10
1
0.3640 = X/10
X = 3.6
cosθ = 2/h.
cos15° = 3.6/X
1
0.9659 = 3.6/X
0.9659X = 3.6
0.9659 0.9659
X = 3.7