

Furman Wylie Mathematics Tournament
Junior Exam Answers
March 4, 2000

1. The answer is 21.
2. The answer is $\frac{-23}{4}$.
3. The answer is $p(x) = 2x - 1$, which is none of the above.
4. The answer is $x = -.7$.
5. The answer is 378.
6. The answer is $x^4 - 2x^2 - 1 = 0$.
7. The answer is 55. Try counting how many have a particular square as its lower left corner, and then add these subtotals together.
8. The answer is $-2 < b < 2$.
9. The answer is 6.
10. The answer is 8, which is none of the above.
11. The answer is 20.
12. The answer is 3. Note that two necklaces are different if and only if the blue beads are different distances apart.
13. The answer is $x^2 + 6x + 10$.
14. The answer is 51.
15. The answer is 9, which is none of the above.
16. The answer is 5051. Try doing it for 3 or 4 lines, and see if you can see a pattern.
17. The answer is 22. The actual number is 29092.
18. The answer is 7. Draw a tree diagram.
19. The answer is 1. The only other real root is 1.
20. The answer is 24.
21. The answer is 7 inches.
22. The answer is 3.
23. The answer is 16. Isn't this a fun problem? Darby is my daughter, and actually relies on me to buy her apples.
24. The answer is 12.
25. The answer is $\sqrt{2} - 1$, which is none of the above.

26. The answer is 3.
27. The answer is $\frac{4}{5}$.
28. The answer is $\frac{32}{7}$. Don't you love problems like this?
29. The answer is 13.
30. The answer is 1. The display has said 1 for a long time! Hannah, by the way, is my other daughter. I had to give her equal time!
31. The answer is -150 , which is none of the above. Madison is my neice. Look for Darby, Hannah and Madison to make an appearance in the ciphering problems as well.
32. The answer is $\sqrt{(11 - \frac{57}{11})^2 + 64}$. Pythagoras rules!
33. The answer is $1458 = 2 \cdot 3^6$. Hint: Show that you can always improve the net product when any of the numbers in it exceeds 3, and then use the fact that $3^2 > 2^3$.