Anomaly’s Heredity SSSS Answer Key:

Multiple Choice:
1. B
2. C
3. B
4. A
5. B
6. B
7. D
8. B
9. A
10. B
11. B
12. D
13. A
14. D
15. A
16. B
17. D
18. D
19. A
20. C

True/False
21. True
22. True
23. False; Adenine and Guanine are purines because they have three rings in their structure
24. False; both of them have 5 carbons
25. False; on the 3’ end is an amino acid and the 5’ end is an anticodon
26. True
27. False; Polydactyly is an autosomal dominant disorder
28. False; Translation occurs in the cytoplasm/ribosomes
29. False; mutation occurs on chromosome 11
30. False; Haploid cells have a number of chromosomes represented by n
31. False; replicates from 5’ to 3’.
32. True
33. False; Incomplete dominance is displayed in snapdragon flowers
34. True
35. False; there are four types of protein structures: primary, secondary, tertiary, and quaternary
36. True
37. True
38. False; G1 and G2 stages
39. True
40. False; 2003

41. a. $X^r X^r$

<table>
<thead>
<tr>
<th></th>
<th>$X^r X^r$</th>
<th>$X^r Y$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$X^r X^r$</td>
<td>$X^r Y$</td>
</tr>
</tbody>
</table>

b. $75\%$

c. none of them ($0\%$)

42. a. $YR$

<table>
<thead>
<tr>
<th></th>
<th>$YR$</th>
<th>$Yr$</th>
<th>$yR$</th>
<th>$yr$</th>
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<tbody>
<tr>
<td>$YR$</td>
<td>YYRR</td>
<td>YYRr</td>
<td>YyRR</td>
<td>YyRr</td>
</tr>
<tr>
<td>$Yr$</td>
<td>YYRr</td>
<td>YYrr</td>
<td>YyRr</td>
<td>Yyrr</td>
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<tr>
<td>$YR$</td>
<td>YYRR</td>
<td>YyRR</td>
<td>YYrr</td>
<td>Yyrr</td>
</tr>
<tr>
<td>$Yr$</td>
<td>YYRr</td>
<td>YYrr</td>
<td>YyRr</td>
<td>Yyrr</td>
</tr>
</tbody>
</table>

b. • YYRR, YYRr, YyRR, YyRr – Yellow, Round
   • YYrr, Yyrr - Yellow, wrinkled

c. $12.5\% (1/8)$

43. (from left to right, top to bottom)
   a. Unaffected male
   b. Affected female
   c. Male index case
   d. Unaffected female
   e. Married
   f. Heterozygous (carrier) female

44. a. 

```
  I
 I-1  I-2  I-3  I-4
   /    /    /    /
II   II-2 II-3
   /    /    /
II-1 II-2 II-3
   /    /
III   III-1
```
b. 50%

45.
    a. GUAGCUAUCUGAUCGGAUCACAUACUCGACUCGCUCCGAUCGAUCUAG
    b. transcription
    c. 16
    d. val-ala-ile-cys-ile-gly-ser-his-ile-asp-ser-leu-arg-ser-ile-stop
    e. Alanine (ala), Valine (val), Isoleucine (ile), Leucine (leu)
    f. Cysteine (cys), Glycine (gly), Serine, (ser), Histidine (his), Aspartate (asp), Arginine (arg)

46.

47.
    a. Prophase: Chromatin condense into chromosomes. Centrioles move to opposite ends of the cell.
    b. Telophase: Chromosomes turn back into chromatin and nuclear envelopes reform.
    c. Metaphase: The chromosomes line up in the center of cell and spindle fibers connect to the chromosomes at the centromere.
    d. Interphase: Organelles and DNA duplicate and cell grows. There are checkpoints to make sure that nothing goes wrong during the duplication process.
    e. Anaphase: The spindle fibers pull the chromosome apart into two separate chromatids.

48.

<table>
<thead>
<tr>
<th>Mitosis</th>
<th>Both</th>
<th>Meiosis</th>
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</thead>
<tbody>
<tr>
<td>-Deals with Growth</td>
<td>-reproduce cells</td>
<td>-deals with reproduction</td>
</tr>
<tr>
<td>-Somatic (body) cells</td>
<td>-involved with chromosomes and dna</td>
<td>-sex cells</td>
</tr>
<tr>
<td>-46 chr -&gt; 46chr</td>
<td>-many stages</td>
<td>-46 chr -&gt; 23 chr</td>
</tr>
<tr>
<td>-DNA remains same</td>
<td>-chromosomes line up in the middle</td>
<td>-DNA is different</td>
</tr>
<tr>
<td>-Asexual reproduction</td>
<td>-then chromosomes separate</td>
<td>-sexual reproduction</td>
</tr>
<tr>
<td>-4 stages</td>
<td>-start with 46 chromosomes</td>
<td>-8 stages</td>
</tr>
<tr>
<td>-Diploid cells</td>
<td></td>
<td>-haploid cells</td>
</tr>
<tr>
<td>-2 daughter cells</td>
<td></td>
<td>-4 daughter cells</td>
</tr>
<tr>
<td>-undergoes only 1 division</td>
<td></td>
<td>-undergoes 2 divisions</td>
</tr>
<tr>
<td>-no crossing over</td>
<td></td>
<td>-crossing over occurs in prophase 1</td>
</tr>
</tbody>
</table>