

BLOOD TYPE AND INHERITANCE

Name _____

In blood typing, the gene for type A and the gene for type B are codominant, for type O is recessive. Using Punnett squares, determine the possible blood ty offspring when:

$$I^a = I^b > i$$

1. Father is type O, Mother is type O

| | | |
|---|----|--|
| | i | |
| i | ii | |
| | | |

100 % O
~~0~~ % A
~~0~~ % B
~~0~~ % AB

2. Father is type A, homozygous; Mother is type B, homozygous

| | | |
|-------|-----------|-------|
| | I^A | I^A |
| I^B | $I^A I^B$ | |
| I^B | | |

~~0~~ % O
~~0~~ % A
~~0~~ % B
 100 % AB

3. Father is type A, heterozygous; Mother is type B, heterozygous

| | | |
|-------|-----------|---------|
| | I^A | i |
| I^B | $I^A I^B$ | $I^B i$ |
| i | $I^A i$ | ii |

25 % O
 25 % A
 25 % B
 25 % AB

} Ratio = 1:1:1:1

4. Father is type O, Mother is type AB

| | | |
|-------|---------|---|
| | i | i |
| I^A | $I^A i$ | |
| I^B | $I^B i$ | |

~~0~~ % O
 50 % A
 50 % B
~~0~~ % AB

} Ratio = 1:1

5. Father and Mother are both type AB

| | | |
|-------|-----------|-----------|
| | I^A | I^B |
| I^A | $I^A I^A$ | $I^A I^B$ |
| I^B | $I^A I^B$ | $I^B I^B$ |

~~0~~ % O
 25 % A
 25 % B
 50 % AB

} 1:2:1