

Blood Typing Practice Problems

1. Julie has blood type A and she marries Mark, whose blood type is B. They have three children: Joan, James, and Pete. Joan has blood type O, James has blood type A, and Pete has blood type B. Explain how this is possible. Show your work using a Punnett square.

	A	O
B	AB	BO
O	AO	OO

What are the parent genotypes?
 P: AO x BO

	A	B	O
A	AA	AB	AO
B	AB	BB	BO
O	AO	BO	OO

Key: AA - A; AB - AB; BB - B; OO - O
 AO - A; BO - B

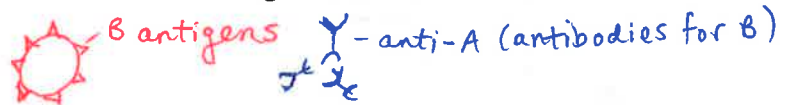
Explain:
 Both parents must be heterozygous for type A and type B blood, since Joan has type O blood. They each donate an O allele.

2. SpongeBob decided that he wanted to donate blood at the local hospital. He has B type B blood. Right after SpongeBob gives blood, a woman, SpongeBillyJean, arrives at the hospital's emergency room after losing a lot of blood from a sea urchin spike wound. SpongeBillyJean has type AB blood.

- a. Can SpongeBob's blood be transfused to SpongeBillyJean? Explain your answer AND use pictures of red blood cells, antigens, and antibodies.

*Yes, SpongeBob's type B blood is compatible w/ SpongeBillyJean's type AB.

SpongeBob - type B
 SpongeBillyJean - type AB



- b. If SpongeBob and SpongeBillyJean were to start a family, what would be the possible blood types of their children? Show your work with Punnett squares.

	B	B
A	AB	AB
B	BB	BB

1/2 AB
 1/2 BB

	B	O
A	AB	AO
B	BB	BO

1/4 AB
 1/4 AO
 1/4 BB 1/4 BO

They could have children with type AB and B blood, or type A if SpongeBob is heterozygous.

