

Example: Decide whether each statement below is true or false. If false, give a counterexample.

- a If the square of an integer is even, then the integer must be even.
- b If $x^2 \geq 4$, then $x \geq 2$.
- c If an animal has a pouch, then it is a marsupial.
- d If a number is prime, then it is odd.

Exercise 9: State the converse of each statement below.

- If you are a politician, then you tell the truth.
- If a number is positive, then the square of the number is positive.
- If a student has failed an exam, then he/she must resit the exam.
- If an animal is a fish, then it can swim.

Exercise 10: State the contrapositive of each statement in question 9.

Answers

- 6 a True b False, let $x = -3$.
- c True d False, the number 2 is prime.
- 7 Elsie improves her playing.
- 8 There will be floods every 2 years in Queensland.
- 9 a If you tell the truth, then you are a politician.
- b If the square of a number is positive, then the number is positive.
- c If a student must resit an exam, then he/she has failed the exam.
- d If an animal can swim, then it is a fish.
- 10 a If you do not tell the truth, then you are not a politician.
- b If the square of a number is not positive, then the number is not positive.
- c If a student does not have to resit an exam, then he/she has not failed the exam.
- d If an animal cannot swim, then it is not a fish.