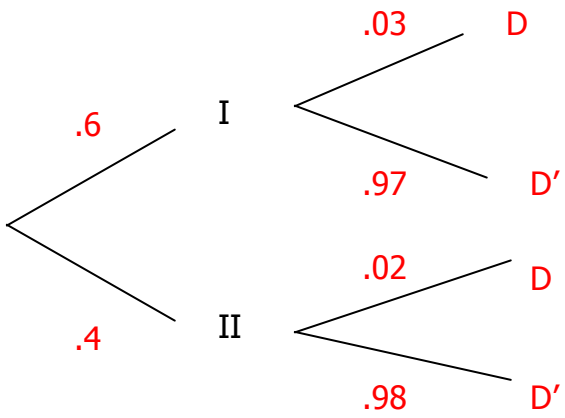
110 WORKSHEET (8.4)

Name Solutions

1. A factory has two machines that produce bolts. Machine I produces 60% of the bolts, and 3% of its bolts are defective. Machine II produces 40% of the bolts and 2% of its bolts are defective.

A. Draw a probability tree for the given information.



B. If it is **given that** a bolt came from Machine I, what is the probability that it is defective? P(D|I)

P(D| I) = 0.03

C. What is the probability that a bolt selected at random came from Machine II **and** is defective? P(II ∩ D)

P(II ∩ D) = .4(.02) = 0.008

D. What is the probability that a random bolt is defective? P(D)

P(D) = .4(.02) + .6(.03) = .008 + .018 = .026

E. **Given that** a bolt is defective, what is the probability that it came from Machine II? P(II|D)

$$P(II|D) = \frac{.008}{.026} = .307$$