

HW 8 BUBBLE

Key

1 PT EACH

Show your work on this sheet. Circle answers. You may use your homework.

$P(A) = 0.7$, $P(B) = 0.4$, $P(AB) = 0.2$ (ex 1).

1. Determine $P(B^c)$.

$$1 - P(B) = 0.6$$

2. Determine $P(AB^c)$.

$$P(A) - P(AB) = 0.7 - 0.2 = 0.5$$

3. $P(B|A)$.

$$P(AB)/P(A) = \frac{0.2}{0.7} = \frac{2}{7}$$

$P(OIL) = 0.2$, $P(+|OIL) = 0.9$, $P(+|no\ OIL) = 0.3$ (ex 2).

Costs: test = 20, drill = 70. Gross return from OIL is 500.

4. $P(+)$.

$$P(OIL+) + P(OIL^c+) = 0.2 \cdot 0.9 + 0.8 \cdot 0.3$$

5. $P(OIL|+)$.

$$P(OIL+)/P(+)$$
$$= \frac{0.2 \cdot 0.9}{0.2 \cdot 0.9 + 0.8 \cdot 0.3}$$

6. NET from policy "test, drill if test is +" in case $OIL+$.

$$OIL+$$
$$-20 - 70 + 500$$

7. NET from policy "test, drill if test is +" in case OIL^c+ .

$$OIL^c+$$
$$-20 - 70 + 0$$

Draw from $\{2, 2, 2, 6\}$, call it Y (ex 6).

8. EY

$$\frac{2+2+2+6}{4} = 3$$

9. $Var\ Y$

$$\frac{4+4+4+36}{4} - 3^2 = 12 - 9 = 3$$

$E\ X = -\$0.57$ and $Var\ X = \$4.88$.

$T =$ total of 100 independent plays $T = X_1 + X_2 + \dots + X_{100}$ (ex 7).

10. $E\ T = 100(-0.57) = -57$

11. $Var\ T = 100(4.88) = 488$