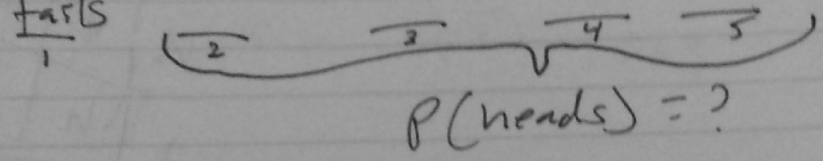
Eli Sobylak
Discrete Math

17-Feb-15
WS 9

1) $P(\text{heads}) = .5$ $P(\text{tails}) = .5$



$P(\text{heads}) = ?$

$$P(E|F) = \frac{P(E \cap F)}{P(F)}$$

$E = THHHH$ $\quad 1/16$

$F = \quad 1/16$

$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$

$\frac{1}{4} \quad \frac{1}{8}$

2) $P(\text{boy}) = .51$

1 2 3 4 5

4) 3 boys ~~$(.49)(.51)(.51)(.51)(.49) =$~~

$\binom{5}{3} .51^3 \cdot .49^2 \approx .32$

6) ≥ 1 boy

All girls is $.49^5$ so

$1 - .49^5 = 0.97$

c) ≥ 1 girl

$.51^5$ for all boys

$1 - .51^5 = 0.96$

d) Same sex children

$.51^5 + .49^5 = .063$

3) a) $P(\text{all 1s}) = \left(\frac{1}{2}\right)^{10} = \frac{1}{1024}$

b) $P(1) \geq 0.6$

$(.06)^{10} = .006$

c)