BE the gambler solution

Take a look at the poster for the slot machine on the facing page. Your job is to play like you're the gambler and work out the probability of getting each combination on the poster. What's the probability of not winning anything?

probability of \$\$\$\$







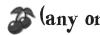
$$P(\vec{s}, \vec{s}, \vec{s}) = P(\vec{s}) \times P(\vec{s}) \times P(\vec{s})$$

$$= 0.1 \times 0.1 \times 0.1 \qquad \text{The probability of a dollar sign appearing in a window is } 0.1$$

probability of 💲 🤹 🌇 (any order)







There are three ways of getting this: P(\$, \$, cherry) + P(\$, cherry, \$) + P(cherry, \$, \$) $= (0.1^2 \times 0.2) + (0.1^2 \times 0.2) + (0.1^2 \times 0.2)$ = 0.00b

probability of



 $P(lemon, lemon, lemon) = P(lemon) \times P(lemon) \times P(lemon)$

A lemon appearing in a window is independent of ones appearing in the other two windows, so you multiply the three probabilities together.

Z 0.2 × 0.2 × 0.2

= 0.008

probability of 3 3 3

 $P(cherry, cherry, cherry) = P(cherry) \times P(cherry) \times P(cherry)$ $= 0.2 \times 0.2 \times 0.2$ = 0.008

probability of winning nothing

Rather than work out all the possible ways in which you could lose, you can say P(losing) = 1 - P(winning).

This means we get none of the winning combinations.

 $P(losing) = 1 - P(\frac{1}{5}, \frac{1}{5}, \frac{1}{5}) - P(\frac{1}{5}, \frac{1}{5}, cherry (any order)) - P(cherry, cherry, cherry) - P(lemon, lemon)$

$$= 1 - 0.001 - 0.006 - 0.008 - 0.008$$

= 0.977

These are the four probability values we calculated above.