

# COINS IN 7-11 LAND

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IN 7-11 LAND, WHERE THE CURRENCY IS CALLED THE SLURPEE, THEY HAVE ONLY 2 COINS. ONE WORTH  $\textcircled{7}$  SLURPEES AND ONE WORTH  $\textcircled{11}$  SLURPEES.

WHICH AMOUNTS CAN YOU MAKE WITH SLURPEES? HOW MANY WAYS CAN YOU DO IT?

36 SLURPEES?

42 SLURPEES?

77 SLURPEES?

51?

66?

59?

154?

Q: CAN YOU MAKE 7  
CONSECUTIVE AMOUNTS WITH  
SLURPEES?

EXAMPLE

TRY:

70

71

72

73

74

75

76

THE RULER OF 7-11 LAND  
HAS ISSUED A CHALLENGE TO THE  
MATHEMATICIANS OF 7-11 LAND:

FIND THE LARGEST AMOUNT  
YOU CANNOT MAKE WITH SLURPEES.

THE (11) SLURPEE COINS  
(WHICH ARE MADE OF FROZEN  
BANANAS) HAVE BEGUN TO  
MELT!

THE RULER OF 7-11 LAND  
HAS AGREED TO TRADE (11) COINS  
FOR (7) COINS (BUT ONLY LESS  
THAN THEY HAVE)

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PERSON:	(11)	~>	(7)	LOST 4 SLURPEES!
1				
2	2 (11)	~>	3 (7)	LOST 1 SLURPEE!
3	3 (11)	~>		
4	4 (11)	~>		
5	5 (11)	~>		
6	6 (11)	~>		

HOW MUCH DOES EACH PERSON LOSE?  
WHAT DO YOU NOTICE?

THE RULER OF 7-11 LAND

REALIZES THAT THIS PLAN IS UNFAIR AND DECIDES TO GIVE EVERYONE 6  $\text{\textcircled{11}}$  COINS.

Now, HOW MUCH DOES EACH PERSON GAIN ?

PERSON :

0	=	0 SLURPEES
1	$6 \text{\textcircled{11}} - 4$	= 62 SLURPEES.
2	=	
3	=	
4	=	
5	=	
6	=	

## M AND N LAND

GIVEN A COIN WORTH

M AND A COIN WORTH

N,

IF M AND N HAVE NO COMMON FACTORS, THEN THE LARGEST AMOUNT YOU CANNOT MAKE IS:

$$\underline{(M-1)(N-1) - 1.}$$

IN EACH CASE TRY TO MAKE  $(M-1)(N-1)$  AND  $(M-1)(N-1) - 1$ :

$$\underline{M=4, N=5}$$

$$\underline{M=5, N=7}$$

$$M=4, N=9$$