# UNIVERSAL PRODUCT CODES

UPC 1.12

# WHAT IS IT?

- A UPC is a 12 digit code generally used to identify a product.
  - Can also be used as coupons

- Why use a UPC instead of just a price tag?
  - Can change price in computer easily

- Universal PRODUCT Code not Universal PRICE code
  - If you decided to change the price of an item you would have to but new bar codes on everything!

# PARTS OF THE CODE

- The 12 digits are broken up into the following

Manufacturer Number (6 digits)

- A company(manufacturer) is assigned a specific code that is used for all of their products

Product Number (5)

- A number specific to a single product the manufacturer sells

Check Digit (1)

- The check digit is determined by the values of the manufacturer and product numbers



0 12345 67890 5

Manufacturer Number | Product Number | Check Digit

# HOW IS A CODE VALID?

- The purpose of a check digit is to guard against input errors or fraud

- In order for the code to be valid it must following the following rule:

1) Multiply the first digit by three and continue to multiply **every other** digit by three.
2) Sum all 12 numbers
3) The **sum** must end in a 0 to be valid.

# SHOW THAT 0-58206-48826-9 IS VALID

| 0 | 5 | 8 | 2 | 0 | 6 | 4 | 8 | 8 | 2 | 6 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|

| 0 | 5 | 8 | 2 | 0 | 6 | 4 | 8 | 8 | 2 | 6 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 5 | 24 | 2 | 0 | 6 | 12 | 8 | 24 | 2 | 18 | 9 |

0 + 5 + 24 + 2 + 0 + 6 + 12 + 8 + 24 + 2 + 18 + 4 = 110

Ends in 0 so it is Valid!

# SHOW THAT 0-52200-48826-5 IS INVALID

| 0 | 5 | 2 | 2 | 0 | 0 | 4 | 8 | 8 | 2 | 6 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|

| 0 | 5 | 2 | 2 | 0 | 0 | 4 | 8 | 8 | 2 | 6 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 5 | 6 | 2 | 0 | 0 | 12 | 8 | 24 | 2 | 18 | 5 |

0 + 5 + 6 + 2 + 0 + 0 + 12 + 8 + 24 + 2 + 18 + 5 = 82

**Ends in 2 so it is invalid!**

# DETERMINE THE CHECK DIGIT FOR 38137009213D

| 3 | 8 | 1 | 3 | 7 | 0 | 0 | 9 | 2 | 1 | 3 | d |
|---|---|---|---|---|---|---|---|---|---|---|---|

| 3 | 8 | 1 | 3 | 7 | 0 | 0 | 9 | 2 | 1 | 3 | d |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 8 | 3 | 3 | 21 | 0 | 0 | 9 | 6 | 1 | 9 | d |

9 + 8 + 3 + 3 + 21 + 0 + 0 + 9 + 6 + 1 + 9 + d

69 + d = must equal a number ending in 0
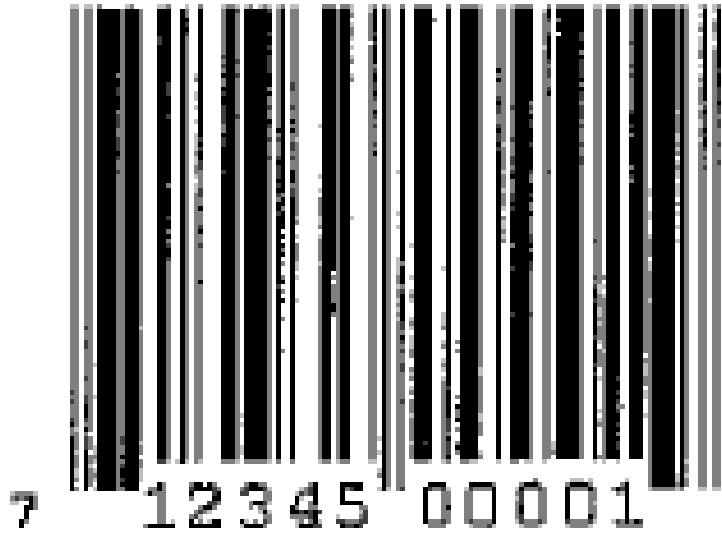
d = 1

# ARE THESE CODES VALID?



8 92685 00100 3

**80 Yes!**

0 43100 75024 4

**58 No!**

7 28408 20421 8

**90 Yes!**

# IDENTIFY THE CHECK DIGIT NEEDED TO MAKE THE UPC VALID



7 12345 00001

**51 + d**

**So d = 9**



6 92771 01744

**100 + d**

**So d = 0**