

***** **Mathematical Weekly** *****

Week 30

An amazing number --- 142857

$$142857 \times 1 = 142857$$

$$142857 \times 2 = 285714$$

$$142857 \times 3 = 428571$$

$$142857 \times 4 = 571428$$

$$142857 \times 5 = 714285$$

$$142857 \times 6 = 857142$$

Until:

$$142857 \times 7 = 999999$$

More:

$$142 + 857 = 999$$

$$14 + 28 + 57 = 99$$

$$1 + 4 + 2 + 8 + 5 + 7 = 27 \rightarrow 2 + 7 = 9$$

$$142857 \times 142857 = 20408122449$$

$$\rightarrow 20408 + 122449 = 142857$$

More: (Throughout, underline denotes “infinite non-repeating decimals”)

$$1 \div 7 = 0.\underline{142857}$$

$$2 \div 7 = 0.\underline{285714}$$

$$3 \div 7 = 0.\underline{428571}$$

$$4 \div 7 = 0.\underline{571428}$$

$$5 \div 7 = 0.\underline{714285}$$

$$6 \div 7 = 0.\underline{857142}$$

$$7 \div 7 = 1.\underline{000000}$$

$$8 \div 7 = 1.\underline{142857}$$

$$9 \div 7 = 1.\underline{285714}$$

142857 appears at the end of the following infinite non-repeating decimals:

$$1366560 \div 7 = 195222.\underline{857142857}$$

Even more:

$$\pi \approx 22 \div 7 = 3.\underline{142857}$$

Yet another amazing number --- 0588235294117647

0588235294117647 x 1 = 0588235294117647
0588235294117647 x 2 = 1176470588235294
0588235294117647 x 3 = 1764705882352941
0588235294117647 x 4 = 2352941176470588
0588235294117647 x 5 = 2941176470588235
0588235294117647 x 6 = 3529411764705882
0588235294117647 x 7 = 4117647058823529
0588235294117647 x 8 = 4705882352941176
0588235294117647 x 9 = 5294117647058823
0588235294117647 x 10 = 5882352941176470
0588235294117647 x 11 = 6470588235294117
0588235294117647 x 12 = 7058823529411764
0588235294117647 x 13 = 7647058823529411
0588235294117647 x 14 = 8235294117647058
0588235294117647 x 15 = 8823529411764705
0588235294117647 x 16 = 9411764705882352

Until:

0588235294117647 x 17 = 999999999999999

More:

05882352 + 94117647 = 99999999
(0588 + 2352 + 9411 + 7647) / 2 = 9999
(05 + 88 + 23 + 52 + 94 + 11 + 76 + 47) / 4 = 99
(0 + 5 + 8 + 8 + 2 + 3 + 5 + 2 + 9 + 4 + 1 + 1 + 7 + 6 + 4 + 7) / 8 = 9

Even More:

1 ÷ 17 = 0.0588235294117647

Still Yet, More Amazing Numbers of the Like:

052631578947368421
0434782608695652173913
0344827586206896551724137931
0212765957446808510638297872340425531914893617
... and so on

-- Although tedious, they can be similarly verified.