Solutions

Mental Division

Example 1

a) *7 goes into 65 nine whole times with a remainder of 2.*
2 times 14 is 28, so our quotient is 9.28571428...

b) *8.25*

c) *65.333...*

Example 2

a) *We start with the left most digit and work our way to the right.*
6 can't go into 4 so we instead look at how many times 6 goes into 43.
6 goes into 43 seven whole times, so we know our answer is 70-something.
We carry the remainder of 1 over and now look at how many times 6 goes into 15.
6 goes into 15 twice with a remainder of 3, so our quotient is 72.5.

b) *157.4*

c) *48.85714285...*

Exercise 1

a) *3.44...*
b) *16.4*
c) *30.25*
d) *2.571428...*
e) *195.33...*
f) *1.22...*
g) *90.5*
h) *294.66...*
i) *20.5*
j) *568.125*
k) *5.125*
l) *15.8*
m) *6.625*
n) *59.33...*
o) *192.75*
p) *189.33...*
q) *51.11...*
r) *38.5*
s) *13.4285714...*
t) *845.833...*

Divisibility Rules

Example 1

The last digit is 3 so we subtract $2 \times 3 = 6$ *from 398 and get 392.*
This is still quite large so we repeat the process, subtracting $2 \times 2 = 4$ *from 39 to reach 35.*
35 is divisible by 7, so 3982 must also be divisible by 7.

Example 2

Our odd numbered digits are 9, 0, and 4 with a sum of 13.
Our even numbered digits are 3 and 2 with a sum of 5.
$13 - 5 = 8$*, which is not divisible by 11, therefore 93024 does not divide 11.*

Example 3

We subtract $9 \times 7 = 63$ *from 115 to get 52.*
$52 = 4 \times 13$*, therefore 1157 is divisible by 13.*

Exercise 2

a) *Yes, the sum of the digits is 9 which divides 3.*
b) *No, the sum of the digits is 17 which does not divide 9.*
c) *225612 is divisible by 2, 3, 4, 6, 9, and 12.*
d) *The number must also be divisible by 3.*
e) *Yes.*
f) *Yes.*
g) i) *1* ii) *2* iii) *1* iv) *5* v) *5*