```perl
 1: #!/usr/bin/perl
 2: # $Id: egypt-mul.perl,v 1.1 2011-01-18 22:20:29-08 - - $
 3:
 4: $0 =~ s|.*/||;
 5: print STDERR "Usage: $0 multiplier multiplicand\n" and exit
 6: unless @ARGV == 2 and ($left, $right) = @ARGV
 7:        and $left =~ m/^\d+$/ and $right =~ m/^\d+$/;
 8:
 9: print "$0: verification: $left * $right = ", $left * $right, "\n\n";
10:
11: $top = 1;
12: while ($top <= $left) {
13:    push @stack, [$top, $right];
14:    $top += $top;
15:    $right += $right;
16: }
17:
18: $result = 0;
19: $fmt = "%12s %12s   %12s %12s\n";
20: while (@stack) {
21:    printf $fmt, "", "", $left, $result;
22:    ($top, $right) = @{pop @stack};
23:    if ($top <= $left) {
24:       $left -= $top;
25:       $result += $right;
26:       printf $fmt, $top, $right, "- " . $top, "+ " . $right;
27:    }else {
28:       printf $fmt, $top, $right, "- 0", "+ 0";
29:    }
30:    printf $fmt, "", "", "= " . $left, "= " . $result;
31:    printf "\n";
32: }
33:
34: printf $fmt, "", "", "zero", "product";
35:
```

```
 1: egypt-mul.perl: verification: 745 * 1033 = 769585
 2:
 3:                                              745              0
 4:            512        528896       - 512      + 528896
 5:                                         = 233       = 528896
 6:
 7:                                              233         528896
 8:            256        264448       - 0         + 0
 9:                                         = 233       = 528896
10:
11:                                              233         528896
12:            128        132224       - 128     + 132224
13:                                         = 105       = 661120
14:
15:                                              105         661120
16:             64         66112        - 64      + 66112
17:                                         = 41        = 727232
18:
19:                                               41         727232
20:             32         33056        - 32      + 33056
21:                                         = 9         = 760288
22:
23:                                                9         760288
24:             16         16528        - 0         + 0
25:                                         = 9         = 760288
26:
27:                                                9         760288
28:              8          8264         - 8       + 8264
29:                                         = 1         = 768552
30:
31:                                                1         768552
32:              4          4132         - 0         + 0
33:                                         = 1         = 768552
34:
35:                                                1         768552
36:              2          2066         - 0         + 0
37:                                         = 1         = 768552
38:
39:                                                1         768552
40:              1          1033         - 1       + 1033
41:                                         = 0         = 769585
42:
43:                                           zero      product
```

```perl
 1: #!/usr/bin/perl
 2: # $Id: egypt-div.perl,v 1.1 2011-01-18 22:20:29-08 - - $
 3:
 4: $0 =~ s|.*/||;
 5: print STDERR "Usage: $0 numerator denominator\n" and exit
 6: unless @ARGV == 2 and ($numer, $denom) = @ARGV
 7:         and $numer =~ m/^\d+$/ and $denom =~ m/^\d+$/;
 8:
 9: print "$0: verification: $numer / $denom = ", int $numer / $denom,
10:       " remainder ", $numer % $denom, "\n\n";
11:
12: $top = 1;
13: $right = $denom;
14:
15: while ($right <= $numer) {
16:     push @stack, [$top, $right];
17:     $top += $top;
18:     $right += $right;
19: }
20:
21: ($remdr, $quot) = ($numer, 0);
22: $fmt = "%12s %12s   %12s %12s\n";
23: while (@stack) {
24:     printf $fmt, "", "", $remdr, $quot;
25:     ($top, $right) = @{pop @stack};
26:     if ($right <= $remdr) {
27:         $remdr -= $right;
28:         $quot += $top;
29:         printf $fmt, $top, $right, "- " . $right, "+ " . $top;
30:     }else {
31:         printf $fmt, $top, $right, "- 0", "+ 0";
32:     }
33:     printf $fmt, "", "", "= " . $remdr, "= " . $quot;
34:     printf "\n";
35: }
36:
37: printf $fmt, "", "", "remainder", "quotient";
```

```
 1: egypt-div.perl: verification: 876543 / 123 = 7126 remainder 45
 2:
 3:                                      876543              0
 4:         4096      503808        -  503808        +  4096
 5:                                  =  372735        =  4096
 6:
 7:                                      372735           4096
 8:         2048      251904        -  251904        +  2048
 9:                                  =  120831        =  6144
10:
11:                                      120831           6144
12:         1024      125952        -       0        +     0
13:                                  =  120831        =  6144
14:
15:                                      120831           6144
16:          512       62976        -   62976        +   512
17:                                  =   57855        =  6656
18:
19:                                       57855           6656
20:          256       31488        -   31488        +   256
21:                                  =   26367        =  6912
22:
23:                                       26367           6912
24:          128       15744        -   15744        +   128
25:                                  =   10623        =  7040
26:
27:                                       10623           7040
28:           64        7872        -    7872        +    64
29:                                  =    2751        =  7104
30:
31:                                        2751           7104
32:           32        3936        -       0        +     0
33:                                  =    2751        =  7104
34:
35:                                        2751           7104
36:           16        1968        -    1968        +    16
37:                                  =     783        =  7120
38:
39:                                         783           7120
40:            8         984        -       0        +     0
41:                                  =     783        =  7120
42:
43:                                         783           7120
44:            4         492        -     492        +     4
45:                                  =     291        =  7124
46:
47:                                         291           7124
48:            2         246        -     246        +     2
49:                                  =      45        =  7126
50:
51:                                          45           7126
52:            1         123        -       0        +     0
53:                                  =      45        =  7126
54:
55:                                   remainder       quotient
```