

Math 210 - Dr. Miller - Homework #32: Egyptian Numerals

Note: Due to typesetting difficulties, the following symbols are substituted in print:

@ is the scroll, \heartsuit is the lotus flower, < is the pointing finger, α is the tadpole, and $\&^!$ is the astonished man.

You should, however, try to draw the symbols as we see them in our textbook.

1. Convert to Hindu-Arabic:

- (a) $\heartsuit\heartsuit \text{ n} // @ \text{ n } @$
- (b) $\&^! \&^! \alpha @ @ @ @ @ \text{ n}$
- (c) $\langle \langle \langle \text{ n n n n n n n } @ @ //$

2. Convert to Egyptian:

- (a) 3,923
- (b) 250,506
- (c) 1,403,456

3. Give the Egyptian numeral that immediately follows the given one:

- (a) $\heartsuit\heartsuit \alpha ///$
- (b) $@ @ // // // // // //$
- (c) $\&^! \text{ n}$
- (d) $\langle \langle \langle \text{ n n n n n n n } @ @ //$

4. Give the Egyptian numeral that immediately precedes the given one:

- (a) $\&^! \text{ n n}$
- (b) $\alpha \langle \langle //$
- (c) $\langle \langle \langle \text{ n n n n n n n } @ @ //$
- (d) $@$

- 5. (a) Counting by tens, give the Egyptian numeral that immediately follows each numeral in Problems #3 and #4.
- (b) Counting by tens, give the Egyptian numeral that immediately precedes each numeral in Problems #3 and #4.
- (c) Counting by thousands, give the Egyptian numeral that immediately follows each numeral in Problems #3 and #4.
- (d) Counting by thousands, give the Egyptian numeral that immediately precedes each numeral in Problems #3 and #4, if possible. If not possible, say so.

6. Add entirely in Egyptian, showing all regroupings:

- (a) $\alpha \alpha \langle \langle \langle \text{ n n n n n n n } ///$ and $\langle \langle \langle \langle \heartsuit \text{ n n n n n n n n } //$
- (b) $\&^! \alpha \alpha \alpha @ @ @ @ @ @ \text{ n } // // // // //$ and $\alpha \langle \heartsuit @ @ @ @ \text{ n n } // // //$
- (c) $\&^! \&^! \langle \langle \langle \langle @ \text{ n n n n n } //$ and $\alpha \alpha \langle \langle @ @ @ @ @ @ @ @ @ @ \text{ n n n n n n n n } // // //$

7. Subtract entirely in Egyptian, showing all regroupings:

- (a) $\alpha \alpha @ @ @ \text{ n n n n n n n n n n } // // // //$ from $\alpha \alpha \alpha @ @ @ @ @ \text{ n n } // //$
- (b) $\langle \langle \langle \heartsuit \heartsuit \heartsuit \heartsuit \text{ n n } /$ from $\alpha \heartsuit \heartsuit \heartsuit \heartsuit \heartsuit \heartsuit @ // //$
- (c) $\alpha \alpha \langle \langle @ @ @ @ @ @ @ @ @ @ \text{ n n n n n n n n } // // //$ from $\&^! \&^! \langle \langle \langle \langle @ \text{ n n n n n } //$

7. (a)

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                                (nnnnn) (/////
                                (nnnnn) (/////
minus  xxx  @@@@ /@          n /  ///
        xx   @@@ nnnnnnnnnn  /////

equals  x          @          nn  ///////

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(b)

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                                (nnnnn)
                                (nnnnn)
                                //
minus  x  <<<<<  <<<<<  <<<<<  @  //
        <<<<  <<<<<  <<<<<  <<<<<  //
equals  <<<<<<  <<<<<  <<<<<<  //

```

(c)

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                                <<<<<<  <<<<<<  <<<<<<  (nnnnn) (/////
                                <<<<<<  <<<<<<  <<<<<<  (nnnnn /) (/////
-  &! &!  <<<<<  <<<<<<  <<<<<<  @  nnnnn  //
        xx  <<<<<  @@@@@@@@@@  nnnnnnnnn  ///

=  &!  xxxxxx  <<<<<<  <<<<<<  @  nn  ///
        xxxxxx  <<<<<<  <<<<<<  nn  ///

```