

Name ANSWER KEY \_\_\_\_\_ points

Set up the equation only for the following problem. DO NOT SOLVE THIS EQUATION. (1) List the quantities involved, indicating those whose values are known and those which are sought. (2) Write a preliminary analysis in pseudocode, diagram or table. (3) Clearly identify what your unknown represents.

A consulting engineer's time is billed at \$60 per hour, and her assistant is billed at \$20 per hour. A customer is billed \$580 for a certain job. If the assistant worked 5 hours less than the engineer, how much time did each bill for the job?

Quantities:

Engineer's hourly rate (\$60/hr)

Assistant's hourly rate (\$20/hr)

Bill for job (\$580)

Hours worked by engineer (?)

Hours worked by assistant (?)

Wage for engineer

Wage for assistant

Analysis: Assistant's hours = Engineer's hours - 5

Bill for job = Engineer's wage + Assistant's wage

Engineer's wage = Engineer's hours  $\times$  Engineer's hourly rate

Assistant's wage = Assistant's hours  $\times$  Assistant's hourly rate

Let  $e$  = engineer's hours

$\therefore e - 5$  = assistant's hours

$$\boxed{580 = 60e + 20(e - 5)}$$