## Combining Functions Homework

Name:
Date:

## Combining Functions

Given the functions $f(x)=4 x+8$ and $g(x)=2 x-12$

1. Find $f(x)+g(x)$.
2. Find $f(x)-g(x)$.

Given the functions $f(x)=3 x^{2}+5 x-8$ and $g(x)=2 x^{2}-9$
3. Find $f(x)+g(x)$.
4. Find $f(x)-g(x)$.
5. Find $f(2)$ and $g(2)$.
6. If $e(x)=f(x)-g(x)$, find $e(2)$.
7. What do you notice about your answers to questions 5 and 6 ?

Given the functions $f(x)=2 x^{2}+3 x$ and $g(x)=5 x-1$
8. Find $2 f(x)+3 g(x)$.
9. Find $5 f(x)-2 g(x)$.

Given the functions $p(x)=x+3, m(x)=x-4$, and $q(x)=2 x$
10. Find $q(x) \cdot p(x)$.
11. $4 q(x) \cdot m(x)$
12. $p(5 x+4)-m(3 x+1)$
13. Find $p(4 x+2)+m(5 x+3)-q(3 x)$
14. Jill has a regular savings account that has $\$ 350$ in it. She saves $\$ 55$ each month in this account. She is also going on tour with her school choir next year. She opens up a new savings account just for tour. She deposits $\$ 25$ to start the account and then, decides to save $\$ 40$ each month from her paycheck into her tour savings account.
a. Write a function to represent the prices $r(x)$ for Jill's regular savings account.
b. Write a function $\dagger(x)$ to represent Jill's tour savings account.
c. Combine the two functions into one function $s(x)=r(x)+\dagger(x)$.
d. Calculate her totals savings after 3 months, 6 months, and 10 months.
15. Joseph's Plumbing Company employs 3 workers. They employ out at the following rates.

- Joseph (owner): $\$ 75$ (flat fee) $+\$ 65$ per hour
- Sam (an apprentice): \$10 (flat fee) + \$25 per hour
- Sally: \$50 (flat fee) + \$45 per hour
a. Write 3 functions, one for each employee.
b. Write a new function to show the total amount of money coming in for the company in terms of hours worked?
c. How much money will the company make if all the employees work an 8 hour day?

