Problems are one point each.

1 - 7 Text exercises pp. 165-167 Problems 3, 6a, 7c, 9, 12, 13, 15

8. Find and list BNF grammars for IF statements in Go, Ruby and Fortran 77. You need only list the production for the IF statement and do not need to list productions for other non-terminals. Translate the following IF statement from PHP into each of three languages.

```php
if ($x == $y) {
    $y = $z;
    $x = 10;
} elseif ($y < $x){
    $x = $y;
} else
    $x += 1;
```

Note that variable names are always preceded by $ in PHP, == is the relational equals operator, = is the assignment operator, and += is addition with assignment.

9. Cobol has a NEXT SENTENCE construct that can be used in an IF statement. Find a Cobol BNF or EBNF grammar for the IF statement, and then research NEXT SENTENCE and explain its semantics (i.e., exactly what does it do?).

10. Write a BNF grammar for signed floating point numbers with optional exponents, using the following rules:
- a leading sign (+ or -) is optional
- at least one non-zero digit must precede the optional decimal point.
- zero or more digits may follow the decimal point
- exponents are optional, if present are in the form of a letter E followed by a non-optional sign (+ or -) followed by an integer exponent

Examples are:
-51231.0000112345E+12  +4.2E+2  2.0E-100  123E-5  -12