```python
1  # Demonstrates if-else conditions by calculating a grade in a course.
2
3  course_points = float(input("How many points did you earn in the class? "))
4  max_points = float(input("How many points is the class out of? "))
5
6  # I want to print different messages depending on the grade earned.
7  percentage = course_points / max_points
8
9  # In English, "If the percentage is > 90%, then print 'A'"
10 if percentage >= 0.9:
11     # The part following the if is called a condition. A condition is an
12     # expression that evaluates to either True or False. When the condition
13     # is True, Python executes the statements inside the "if" statement,
14     # which are always indented one level from the if statement itself.
15
16     # The "body" of an if statement is called a "block". Blocks are always
17     # indented one level.
18     print("You earned an A :D")
19     # This print will only happen if the condition was True. Otherwise the
20     # block of the if statement is skipped.
21
22     # To express the English idea of "Otherwise, if...", we use elif:
23 elif percentage > 0.8:
24     # An elif is another condition that will only be tried if the previous
25     # condition is False. We call this mutually exclusive outcomes.
26
27     # Python knows that this elif is connected to the first "if" because they
28     # are indented at the same level. Python is VERY STRICT ABOUT THIS.
29     print("You earned a B :)")
30 elif percentage > 0.7:
31     print("You earned a C :|")
32 elif percentage > 0.6:
33     print("You earned a D :(")
34     # To expess the English idea of "Finally", we use a last else:
35 else:
36     # An else will only happen if all the preceding if and elif conditions
37     # were False
38     print("You failed >:(")
39
40 # Most conditions (for now) will involve comparison operators:
41 #   <, >, <=, >=, ==, !=
42 # Comparisons act on numerical types (int and float).
43
44 # Lessons:
45 #   Conditions - what are they?
46 #   Comparison operators
47 #   if, elif, and else
48 #   Indentation of blocks
49
```

```python
 1  # Redo the quadratic equation solver, but account for imaginary solutions.
 2  import math
 3
 4  a = float(input("Enter A: "))
 5  b = float(input("Enter B: "))
 6  c = float(input("Enter C: "))
 7
 8  discriminant = b * b - 4 * a * c
 9  if discriminant == 0:
10      # One solution: -b/2a
11      x1 = -b / (2 * a)
12      print("There is one solution: x = {0}".format(x1))
13  elif discriminant < 0:
14      # No real solutions
15      print("There are no real solutions.")
16  else:
17      # Two solutions
18      discr_sqrt = math.sqrt(discriminant)
19      x1 = (-b + discr_sqrt) / (2 * a)
20      x2 = (-b - discr_sqrt) / (2 * a)
21      print("There are two solutions: x1 = {0}, x2 = {1}".format(x1, x2))
22
23
```

```python
 1  # We can write a "menu" in a program using an if-elif-elif-else structure.
 2
 3  print("Which of the Seven New Gods would you like to learn about?")
 4  print("1. The Father")
 5  print("2. The Mother")
 6  print("3. The Maiden")
 7  print("4. The Crone")
 8  print("5. The Warrior")
 9  print("6. The Smith")
10  print("7. The Stranger")
11
12  # Read the user's input in response to the menu.
13  selection = int(input())
14
15  # Select an appropriate action.
16  if selection == 1:
17      print("The Father represents divine justice, and judges the souls of the    ⮐
            dead.")
18  elif selection == 2:
19      print("The Mother represents mercy, peace, fertility, and childbirth. She is ⮐
            sometimes referred to as \"the strength of women\".")
20  elif selection == 3:
21      print("The Maiden represents purity, innocence, love, and beauty.")
22  elif selection == 4:
23      print("The Crone represents wisdom and foresight. She is represented carrying ⮐
            a lantern.")
24  elif selection == 5:
25      print("The Warrior represents strength and courage in battle.")
26  elif selection == 6:
27      print("The Smith represents creation and craftsmanship.")
28  elif selection == 7:
29      print("The Stranger represents death and the unknown. It is rarely prayed     ⮐
            to.")
30  elif selection == 0:
31      print("Valar morghulis.")
32  # The final else is a "none of the other options was chosen" branch.
33  else:
34      print("The night is dark and full of terrors for those who cannot read the   ⮐
            menu.")
35
```

```python
 1  # Calculate an hourly worker's weekly wage based on hourly rate and hours worked.
 2  # Use constant variables to set thesholds for various payment options.
 3  HOURS_FULLTIME = 40
 4  HOURS_OVERTIME = 60
 5  RATE_OVERTIME = 1.5
 6  RATE_SUPER_OVERTIME = 2.0
 7
 8  hours = float(input("How many hours did you work this week? "))
 9  rate = float(input("How much are you paid per hour? $"))
10
11  earned = 0
12  if hours <= HOURS_FULLTIME:
13      # This person gets their rate times their hours.
14      earned = hours * rate
15  elif hours <= HOURS_OVERTIME:
16      # This person gets their rate times 40 hours, plus 150% of their rate times
17      # the number of hours worked in excess of 40.
18      overtime = hours - HOURS_FULLTIME
19      earned = rate * HOURS_FULLTIME + (rate * RATE_OVERTIME) * overtime
20  else:
21      # This person worked more than 60 hours. They get their rate times 40 hours,
22      # plus 150% of their rate times 20 hours, plus 200% of their rate times the
23      # number of hours in excess of 60.
24      super_overtime = hours - HOURS_OVERTIME
25      earned = rate * HOURS_FULLTIME \
26          + (rate * RATE_OVERTIME) * (HOURS_OVERTIME - HOURS_FULLTIME) \
27          + (rate * RATE_SUPER_OVERTIME) * super_overtime
28
29  print("You earned ${:0.2f}".format(earned))
30  # This statement creates a formatted string. The {:0.2f} is replaced by the value
31  # of the variable "earned". The 0.2f says to create a decimal number with exactly
32  # two decimal points.
33
34  # Lessons:
35  #   {:0.2f} formatting strings
```