Name Period Date

Concept-Development Practice Page 2-2

Free Fall Speed

1. Aunt Minnie gives you $10 per second for 4 seconds. How much money do you have after 4 seconds? **$40**

2. A ball dropped from rest picks up speed at 10 m/s per second. After it falls for 4 seconds, how fast is it going? **40m/s**

3. You have $20, and Uncle Harry gives you $10 each second for 3 seconds. How much money do you have after 3 seconds? **$50**

4. A ball is thrown straight down with an initial speed of 20 m/s. After 3 seconds, how fast is it going? **50m/s**

5. You have $50 and you pay Aunt Minnie $10/second. When will your money run out? **5s**

6. You shoot an arrow straight up at 50 m/s. When will it run out of speed? **5s**

7. So what will be the arrow's speed 5 seconds after you shoot it? **0 m/s**

8. What will its speed be 6 seconds after you shoot it? 7 seconds? **10 m/s 20m/s**

Free Fall Distance

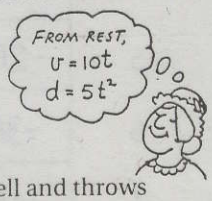
1. Speed is one thing; distance another. *Where* is the arrow you shoot up at 50 m/s when it runs out of speed? **125m**

2. How high will the arrow be 7 seconds after being shot up at 50 m/s? **105m**

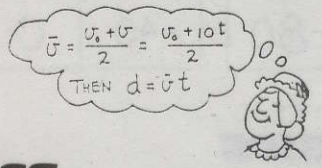
3 a. Aunt Minnie drops a penny into a wishing well and and it falls for 3 seconds before hitting the water. How fast is it going when it hits? **30m/s**

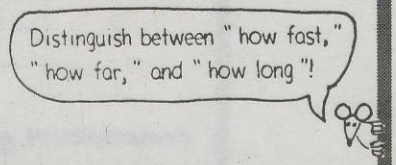
b. What is the penny's average speed during its 3-second drop? **15m/s**

c. How far down is the water surface? **45m**



4. Aunt Minnie didn't get her wish, so she goes to a deeper wishing well and throws a penny straight down into it at 10 m/s. How far does this penny go in 3 seconds? **75m**



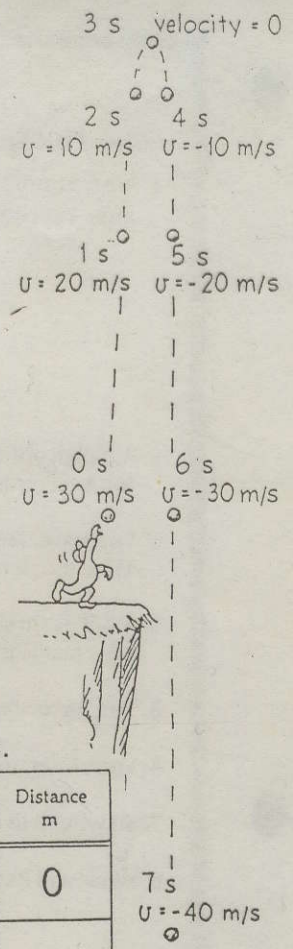


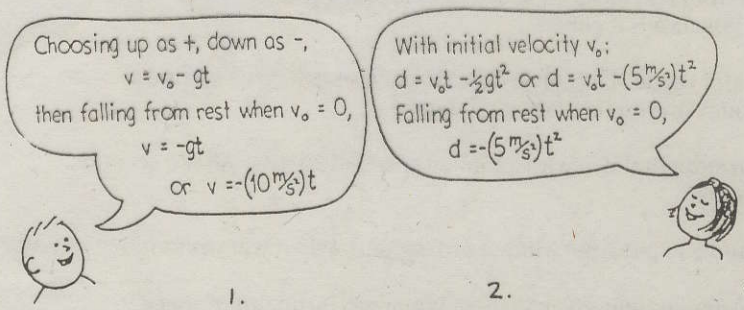
Conceptual PHYSICS

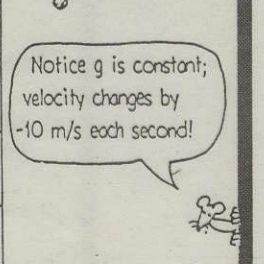
Straight Up and Down

The sketch is similar to Figure 2.6 in the textbook.
Assume negligible air resistance and $g = 10\ m/s^2$.

- Table 1 shows the velocity data of the figure for $t = 0$ to $t = 8$ seconds. Complete the table.
  Distances traveled are from the starting point (the *displacements*).
- Table 2 is for a greater initial velocity. Complete it.
- Table 3 doesn't specify an initial velocity. Choose your own and complete the table accordingly.







Time in seconds	1. Velocity m/s	1. Distance m	2. Velocity m/s	2. Distance m	3. Velocity m/s	3. Distance m
0	30	0	40	0		0
1	20	25	30	35		
2	10	40	20	60		
3	0	45	10	75		
4	-10	40	0	80		
5	-20	25	-10	75		
6	-30	0	-20	60		
7	-40	-35	-30	35		
8	-50	-80	-40	0		

Conceptual PHYSICS