Answers to End-of-Chapter Review Questions chapter 6

1. A stock is measured at a particular point in time while a flow is measured over some period of time.
2. The five main types of capital are natural, manufactured, human, social, and financial capital.
3. The two main types of natural capital are renewable and nonrenewable natural capital.
4. The two main types of manufactured capital are fixed manufactured capital and inventories.
5. The two main types of human capital are physical and intangible human capital.
6. The two main types of social capital are technology and social organization.
7. The two main types of financial capital are equity and debt finance.
8. Physical capital comprises tangible objects, made of materials that were originally or immediately supplied by nature. Intangible capital includes sources of productivity and well-being that cannot be seen or touched.

Answers to End-of-Chapter Exercises chapter 6

1. a. Stock, natural capital
   b. Flow, increase manufactured capital (may decrease natural capital)
   c. Flow, increase financial capital
   d. Stock, social capital
   e. Stock, financial capital
   f. Stock, manufactured capital
   g. Flow, increase social capital
   h. Flow, increase human capital

2. Any number of examples could be used as a basis for new stock-flow diagrams. An example for each is:
   a. Manufactured capital
b. Natural capital
c. Human capital

\[
\begin{array}{ccc}
\text{STOCK} & \text{FLOWS} & \text{STOCK} \\
\end{array}
\]

Knowledge acquired through education

Initial stock of knowledge +

Knowledge forgotten

Next stock of knowledge

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d. Social capital

\[
\begin{array}{ccc}
\text{STOCK} & \text{FLOWS} & \text{STOCK} \\
\end{array}
\]

Technological advances

Initial level of technology +

Technology lost*

Next level of technology

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* such as knowledge of traditional agriculture
3. a. To produce anti-virus software, human capital is needed in the form of programming skills and awareness of harmful viruses; manufactured capital is needed as computers to test the software; natural capital is needed as energy to operate computers; social capital is needed as an organized company with a reputation for reliable service; and financial capital is likely needed to finance the project.

b. Anti-virus software is probably best viewed as resource maintenance because it is intended to keep computers working properly and to limit downtime and lost data.

4. a. Through natural replenishment, the forest gains 1,000 trees during the year to bring the number of trees to 11,000 \([10,000 + (0.10 \times 10,000)]\). At the end of the year, 1,500 trees are harvested. Thus, at the end of the first year, the forest is left with 9,500 trees.

b. Starting with 9,500 trees, the forest gains 950 trees during the second year to bring the number of trees to 10,450 \([9,500 + (0.10 \times 9,500)]\). Then 1,500 trees are harvested at the end of the year, bringing the total to 8,950.

c. Starting with 8,950 trees, the forest gains 895 trees during the third year to bring the number of trees to 9,845. Once 1,500 trees are harvested, the number of remaining trees is 8,345.

d. Natural replenishment during the first year is 1,000 trees (10% of 10,000). Thus, 1,000 trees is the largest number that could be harvested every year on a sustainable basis (assuming no changes in the natural rate of replenishment).

5. We must consider the opportunity costs of Jeremy’s housing. By living in his home, he is forgoing being able to rent it out. Suppose he needs only a small apartment, that he could rent for $800 a month, but lives in his big house, which he could rent out for
$2,000 a month. His housing is “costing him” the lost $1,200. If he realizes that, in fact, his living there is not “free,” he might be inspired to move to the smaller place. He would then have an additional $1,200 a month to spend on other things! A second way to apply the concept of opportunity cost is to notice the amount of financial capital he has tied up in his house, by living in it debt-free. If alternative investments are available, he may be able to come out financially ahead by moving his financial capital to a better use. He might, for example, remain in his house but take out a home equity loan to make home improvements, or invest in a business.

6. The correct matches are: a→ii, b→vi, c→i, d→v, e→viii, f→iv, g→iii.