Answer the questions in the spaces provided on the question sheets. If you run out of room for an answer, continue on a separate sheet of paper.

1. Using set-builder notation, give formal descriptions of the following sets:
   (a) The set of positive integers that are even.

   (b) $\{ -2, -1, 0, 1, 2 \}$

   (c) $\{ 3, 6, 9, 12, \ldots \}$

   (d) $\{ -3, -1, 1, 3, 5, 7, 9 \}$

   (e) $\{ 0, 10, 20, 30, \ldots, 1000 \}$

   *(f) The power set of $X$, denoted $P(X)$.

2. State the cardinality of the following sets:
   (a) Question 1, part (a)

   (b) Question 1, part (b)

   (c) Question 1, part (d)

   (d) Question 1, part (e)

   (e) Question 1, part (f)

Consider the following sets:

$A = \{\ 2,\ 4,\ 6,\ 8\ \}$
$B = \{\ x \in \mathbb{Z}\ :\ x\%2 = 0 \wedge 0 < x < 10\ \}$
$C = \{\ x \in \mathbb{Z}\ :\ x\%2 = 0 \wedge 0 < x \leq 10\ \}$

3. Indicate whether each statement about the sets $A$, $B$ and $C$ is true or false.
   (a) $A \subseteq B$

   (b) $A \subset B$

   (c) $A \subseteq C$

   (d) $A \subset C$

   (e) $C \subseteq B$

   (f) $A = C$

   (g) $A = B$

4. Using roster notation, give formal descriptions of the following power sets:
   (a) $P(A)$

   (b) $P(B)$