Test Your Understanding Solutions: Week 1

1. A proposition is a statement that is either true or false, but not both. We may or may not know the truth value of this proposition.

2.
(a) `I ate MacDonalds for supper last night.` Proposition, false.
`(b) There is a planet circling Sirius that holds alien life forms.` Proposition, don't know.
`(c) 12 is a prime number.` Proposition, false.
`(d) Go the mighty Adelaide Crows!` Not a proposition.
(e) `Do you barrack for the Crows?` Not a proposition.

3.
(a) $q \wedge r$
(b) $r \vee p$
(c) $p \rightarrow (q \vee r)$
(d) $q \leftrightarrow p$

4. Complete the truth tables below.

(a)

p	q	$p \wedge \neg q$
T	T	F
T	F	T
F	T	F
F	F	F

(b)

p	q	$p \rightarrow \neg q$
T	T	F
T	F	T
F	T	T
F	F	T

(c)

p	q	$\neg p \leftrightarrow q$
T	T	F
T	F	T
F	T	T
F	F	F

5. State which of the following integers are odd and which are even. If they are even, then write them in the form $n=2k$. If they are odd, then write them in the form $n=2k+1$.
(a) n=6, k=3 (b) n=11,k=5 (c) n=-8,k=-4 (d) n=-17,k=-9