

- 1 Simplify each of the following.
 - a $\sqrt{28} + \sqrt{175} - \sqrt{63}$
 - b $\sqrt{388} - \sqrt{288} + \sqrt{363} - \sqrt{100}$

- 2 Express $\frac{2}{2-\sqrt{3}}$ with a rational denominator.

- 3
 - a Expand $\sqrt{2}(\sqrt{8} + \sqrt{24})$, giving your answer in simplest form.
 - b Simplify $\sqrt{72} + 5\sqrt{18} - 2\sqrt{162}$.
 - c Expand and simplify $(3\sqrt{2} + \sqrt{3})^2$.

- 4 For $A = \{3, 4, 7, 8\}$ and $B = \{2, 3, 4, 6, 10\}$, describe:
 - a $A \cup B$
 - b $B \setminus A$.

- 5 For $A = \{5, 6, 7, 8, 9\}$ and $B = \{2, 5, 6, 9, 138\}$, describe:
 - a $A \cap B$
 - b $A \setminus B$.

- 6
 - a Express $\frac{8}{15}$ as a recurring decimal.
 - b Express $0.\overline{405}$ as a fraction in simplest form.

- 7 Using the result that $(\sqrt{a} + \sqrt{b})^2 = a + b + 2\sqrt{ab}$, determine the square root of $17 + 6\sqrt{8}$.

- 8 Fifty students were asked if they used the Internet regularly (I), sent emails (E) or sent text messages (T).
 - Twenty-five students said they used the Internet.
 - Twenty-six students sent emails.
 - Twenty students sent text messages.
 - Fourteen students said they used the internet and sent emails (and some of these also sent text messages).
 - Three said that they only sent text messages.
 - Four said that they only used the Internet and three students said they did all three activities.
 - a How many only used the Internet?
 - b How many use none of these?