

112. (1) $\frac{ab}{2c}$ c. 2d. (2) 9 or -3. 114. 177. 115. 18 miles.
 116. $(3x+2y)^2 + (3x+2y)(2x+3y) + (2x+3y)^2 = 19x^2 + 37xy + 19y^2$.
 118. (1) $(x+y)(x+y)(x+y)$. (2) $mn(m-n)$.
 119. (1) $\begin{matrix} x=3, & 1 \\ y=-1, & -3 \end{matrix}$. (2) $\begin{matrix} x=7, & -5 \\ y=2, & -2 \end{matrix}$. 120. $a^3 + b^3$.
 121. (1) 1. (2) $\frac{x-1}{x^2}$. 122. $a-b$. 123. 435.
 124. (1) $x=a \pm b$. (2) $x=3, y=2$.
 125. (1) $\frac{x(x+y+z)}{z(x-y+z)}$. (2) $\frac{3x^2+1}{4x(x^2+1)}$. 126. $x^2 + (a+2)x + 3$.
 127. (1) $(x-3y)(x+8y+1)$. (2) $x\left(x+\frac{2}{x}\right)\left(x-\frac{2}{x}\right)$.
 128. $p - \frac{3q}{2p} - \frac{9q^2}{8p^3}$. 129. (1) $x=4\frac{1}{2}$. (2) $x = \frac{b}{a^2-ab+b^2}, y = \frac{a}{a^2-ab+b^2}$.
 130. $x+a$. 131. (1) x^{a+b+c} . (2) $x^{\frac{1}{2}}y^{\frac{1}{3}}$.
 132. \$1. 134. $x-4+\frac{2}{x}$.
 135. H.C.F. x^3+a^3 . L.C.M. $(x^3+a^3)(x^3-4a^3)$.
 136. (1) $-2y$. (2) 3. 137. $(x-2a)(x^2+2ax+4a^2)(2a+3b)(2a-3b)$.
 138. (1) 3. (2) $x=105, y=210, z=420$. 139. The difference is 3.
 140. $x^3-4y^3-9z^3-12y^{\frac{1}{2}}z^{\frac{1}{2}}$. 141. 3 hrs. 36 min.
 142. (1) $\frac{3}{2}$. (2) $\frac{8}{9}$. 143. $\sqrt{\frac{x}{y}} \cdot \sqrt{\frac{y}{x}} - 1$.
 144. (1) $\frac{1}{x^2+1}$. (2) $\frac{a^2+y^2}{a-y}$. 145. (1) $4(\sqrt{2}+\sqrt{3})$. (2) $\sqrt{21}+\sqrt{14}$.
 146. (1) $x = \frac{a^2+b^2}{a+b}$. (2) $x=2\frac{1}{2}$ or $-1\frac{3}{4}$, $y=-1\frac{1}{6}$ or $1\frac{2}{3}$.
 148. $a^{\frac{1}{2}} - 2a^{\frac{1}{2}}x^{\frac{1}{2}} + x^{\frac{1}{2}}$. 149. a^2+1 . 150. \$3.
 152. 0. 153. $\frac{x^2}{(7x+4)(4x-3)}$.
 155. (1) $x=7$ or $-\frac{77}{2}$. (2) $x=\pm 5$ or $\pm 2\sqrt{3}$, $y=\pm 3$ or $\pm \frac{\sqrt{3}}{3}$.
 156. (1) 0. (2) $x^{\frac{1}{2}}y^{\frac{1}{2}}$. 157. $(p+1)x - (p-1)$. 158. $\frac{3a}{5b(x^2y^3-1)}$.
 159. (1) $1-2^n$. (2) 3^n-2^n . 160. 5 hrs. 57', $47\frac{1}{2}''$.
 161. 12. 162. (1) $\left(\frac{ab}{2a+b}\right)^2$. (2) $\frac{3}{5}$.