

Vectors

32. a.) $a + b$

$$= \begin{pmatrix} 2 \\ 4 \end{pmatrix} + \begin{pmatrix} -3 \\ 5 \end{pmatrix}$$

$$= \begin{pmatrix} -1 \\ 9 \end{pmatrix}$$

b.) $2a + 3b$

$$= 2 \begin{pmatrix} 2 \\ 4 \end{pmatrix} + 3 \begin{pmatrix} -3 \\ 5 \end{pmatrix}$$

$$= \begin{pmatrix} 4 \\ 8 \end{pmatrix} + \begin{pmatrix} -9 \\ 15 \end{pmatrix}$$

$$= \begin{pmatrix} -5 \\ 23 \end{pmatrix}$$

c.) $2a - 2b$

$$= 2 \begin{pmatrix} 2 \\ 4 \end{pmatrix} - 2 \begin{pmatrix} -3 \\ 5 \end{pmatrix}$$

$$= \begin{pmatrix} 4 \\ 8 \end{pmatrix} - \begin{pmatrix} -6 \\ 10 \end{pmatrix}$$

$$= \begin{pmatrix} 10 \\ -2 \end{pmatrix}$$

d.) $3b - 2a$

$$= 3 \begin{pmatrix} -3 \\ 5 \end{pmatrix} - 2 \begin{pmatrix} 2 \\ 4 \end{pmatrix}$$

$$= \begin{pmatrix} -9 \\ 15 \end{pmatrix} - \begin{pmatrix} 4 \\ 8 \end{pmatrix}$$

$$= \begin{pmatrix} -13 \\ 7 \end{pmatrix}$$

33.) $2m + 3n$

$$= 2 \begin{pmatrix} 3 \\ -2 \\ 4 \end{pmatrix} + 3 \begin{pmatrix} 1 \\ 0 \\ -2 \end{pmatrix}$$

$$= \begin{pmatrix} 6 \\ -4 \\ 8 \end{pmatrix} + \begin{pmatrix} 3 \\ 0 \\ -6 \end{pmatrix}$$

$$= \begin{pmatrix} 9 \\ -4 \\ 2 \end{pmatrix}$$

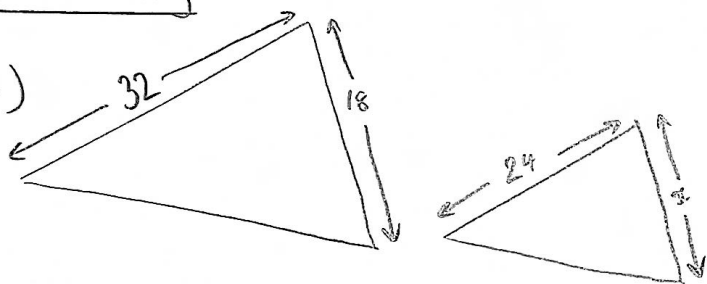
∴ $|2m + 3n|$

$$= \sqrt{9^2 + (-4)^2 + 2^2}$$

$$= \underline{\underline{\sqrt{101}}}$$

Similarity

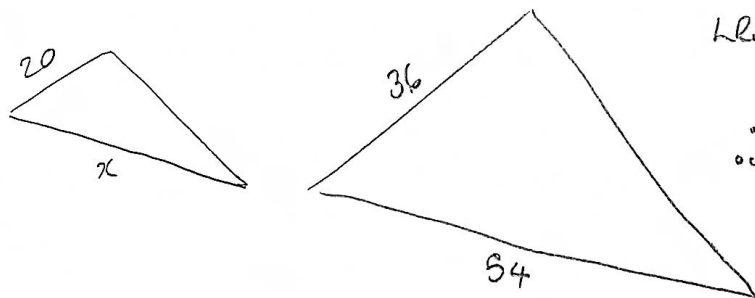
38a.)



$$\text{LRSF} = \frac{24}{32} = \frac{3}{4}$$

$$\therefore x = \frac{3}{4} \times 18 = \underline{\underline{\frac{27}{2} \text{ cm}}}$$

b.)



$$\text{LRSF} = \frac{20}{36} = \frac{5}{9}$$

$$\therefore x = \frac{5}{9} \times 54 = \underline{\underline{30 \text{ mm}}}$$

39.) $\text{LESF} = \frac{9}{6} = \frac{3}{2}$

$$\text{VSF} = \left(\frac{3}{2}\right)^3 = \frac{27}{8}$$

$$\therefore \text{Volume} = \frac{27}{8} \times \frac{30}{1}$$

$$= \underline{\underline{101.25 \text{ ml}}}$$