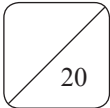
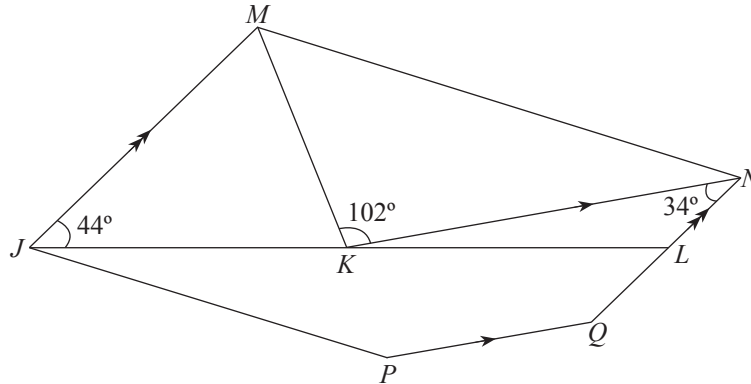


Revision Test 2

Duration: 40 minutes



1.



In the diagram, JKL and NLQ are straight lines. MJ is parallel to NQ and KN is parallel to PQ . Given that $\angle MKN = 102^\circ$, $\angle KNQ = 34^\circ$ and $\angle MJK = 44^\circ$, by stating your reasons clearly, calculate

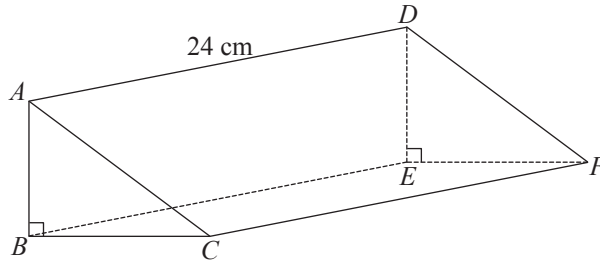
- (a) $\angle JMK$,
- (b) $\angle NKL$,
- (c) $\angle JLQ + \angle PQL$.

Answer (a) _____ $^\circ$ [2]

(b) _____ $^\circ$ [2]

(c) _____ $^\circ$ [2]

2.



The diagram above shows a metallic prism $ABCDEF$ of height 24 cm. The lengths of AB , BC and AC are in the ratio 3 : 4 : 5, the density of the prism is 2.7 g/cm^3 and the prism has a volume of 576 cm^3 . Calculate

- (a) the lengths of AB , BC and AC ,
- (b) the total surface area of the prism,
- (c) the mass of the prism.

Answer (a) $AB =$ _____ cm

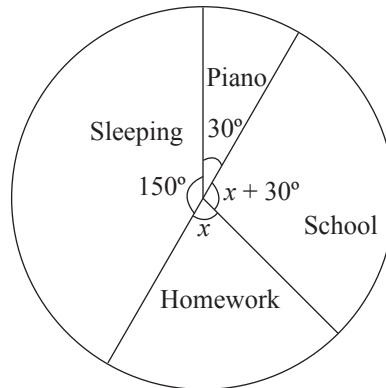
$BC =$ _____ cm

$AC =$ _____ cm [4]

(b) _____ cm^2 [2]

(c) _____ g [2]

10. The pie chart shows the proportion of time Jessie spends on 4 activities in a day.



Find

- (a) the value of x ,
- (b) the number of hours Jessie spends on playing piano,
- (c) the percentage of the difference in the number of hours Jessie spends in the school and on doing homework. Give your answer correct to 2 significant figures.

Answer (a) $x =$ _____ [2]

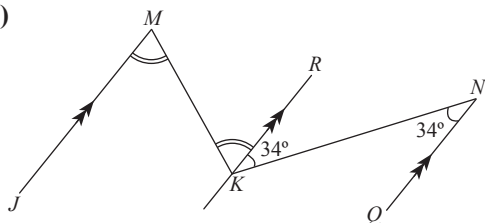
(b) _____ [2]

(c) _____% [2]

–End–

Solutions to Revision Test 2

1. (a)



$$\begin{aligned}\angle RKN &= \angle KNQ && \text{(alt. } \angle\text{s, } RK \parallel NQ) \\ &= 34^\circ \\ \angle JMK &= \angle MKR && \text{(alt. } \angle\text{s, } MJ \parallel RK) \\ &= 102^\circ - 34^\circ && [1] \\ &= 68^\circ && [1]\end{aligned}$$

$$\begin{aligned}\text{(b) } \angle NKL + \angle MKN &= \angle MJK + \angle JMK && [1] \\ & && \text{(ext. } \angle\text{s of } \triangle)\end{aligned}$$

$$\begin{aligned}\angle NKL + 102^\circ &= 44^\circ + 68^\circ \\ \angle NKL &= 10^\circ && [1]\end{aligned}$$

$$\begin{aligned}\text{(c) } \angle JLQ &= \angle KNL + \angle NKL && \text{(ext. } \angle\text{s of } \triangle) \\ &= 34^\circ + 10^\circ \\ &= 44^\circ && \left[\frac{1}{2} \right]\end{aligned}$$

$$\begin{aligned}\angle PQL &= 180^\circ - \angle KNL && \text{(int. } \angle\text{s, } KN \parallel PQ) \\ &= 180^\circ - 34^\circ \\ &= 146^\circ && \left[\frac{1}{2} \right]\end{aligned}$$

$$\begin{aligned}\angle JLQ + \angle PQL &= 44^\circ + 146^\circ \\ &= 190^\circ && [1]\end{aligned}$$

2. (a) Volume of the prism = base area \times height

$$\begin{aligned}\text{Area of } \triangle ABC &= \frac{\text{volume}}{\text{height}} \\ &= \frac{576}{24} \\ &= 24 \text{ cm}^2 && [1]\end{aligned}$$

Let $AB = 3x$ cm, $BC = 4x$ cm and $AC = 5x$ cm.

$$\begin{aligned}\frac{1}{2} \times AB \times BC &= 24 \text{ cm}^2 \\ \frac{1}{2} \times 3x \times 4x &= 24 && [1]\end{aligned}$$

$$\begin{aligned}6x^2 &= 24 \\ x^2 &= 4 \\ x &= 2 \quad (x > 0) && [1]\end{aligned}$$

$$\begin{aligned}AB &= 3(2) = 6 \text{ cm} \\ BC &= 4(2) = 8 \text{ cm} \\ AC &= 5(2) = 10 \text{ cm} && [1]\end{aligned}$$

$$\begin{aligned}\text{(b) Total surface area of the prism} & \\ &= 2 \times \text{area of } \triangle ABC + \text{area of } ABED \\ &\quad + \text{area of } ADFC + \text{area of } BCFE \\ &= 2 \times \frac{1}{2}(6)(8) + 6(24) + 10(24) + 8(24) && [1] \\ &= 624 \text{ cm}^2 && [1]\end{aligned}$$

$$\begin{aligned}\text{(c) Mass of the prism} &= \text{density} \times \text{volume} && [1] \\ &= 2.7 \times 576 \\ &= 1555.2 \text{ g} && [1]\end{aligned}$$

$$\begin{aligned}\text{3. (a) Angle at a point} &= 360^\circ \\ x + x + 30^\circ + 30^\circ + 150^\circ &= 360^\circ && [1] \\ 2x + 210^\circ &= 360^\circ \\ 2x &= 150^\circ \\ x &= 75^\circ && [1]\end{aligned}$$

$$\begin{aligned}\text{(b) 1 day} &= 24 \text{ hours} \\ \text{Number of hours (piano)} &= \frac{30^\circ}{360^\circ} \times 24 && [1] \\ &= 2 && [1]\end{aligned}$$

$$\begin{aligned}\text{(c) Angle (school - homework)} & \\ &= (75^\circ + 30^\circ) - 75^\circ \\ &= 30^\circ && [1] \\ \% \text{ (school - homework)} &= \frac{30^\circ}{360^\circ} \times 100\% \\ &= 8.3\% && [1]\end{aligned}$$