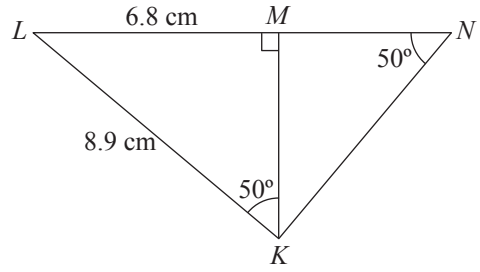
Revision Test 2

Duration: 40 minutes

20

1.



In the diagram, LMN is a straight line. $ML = 6.8$ cm, $LK = 8.9$ cm, $\angle LMK = 90°$ and $\angle MNK = \angle LKM = 50°$.

(a) Calculate the length of MK.

(b) Name a pair of triangles that is similar to $\triangle LMK$.

(c) Calculate the length of MN.

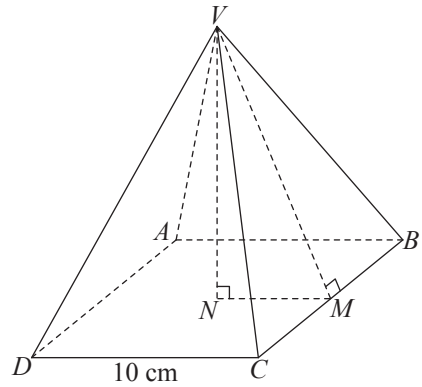
Give your answers correct to one decimal place when necessary.

Answer **(a)** $MK =$ _____ cm [2]

(b) _____ and _____ [1]

(c) $MN =$ _____ cm [2]

2.



The diagram shows a square pyramid of side 10 cm. Given that M is the midpoint of BC and the volume of the pyramid is 400 cm^3, find

(a) the length of VN, the height of the pyramid,

(b) the length of VM, the altitude of triangle VCB,

(c) the total surface area of the pyramid.

Answer **(a)** $VN =$ _____ cm [2]

(b) $VM =$ _____ cm [2]

(c) _____ cm^2 [3]

3. 35 pupils were given 5 multiple choice questions in a Mathematics quiz. The scores were recorded in the table below.

Scores	0	1	2	3	4	5
Number of pupils	2	5	10	n	8	3

Find

(a) the value of n,

(b) the modal score,

(c) the median score,

(d) the mean score, correct to 3 significant figures.

A pupil is chosen at random. Find the probability of choosing

(e) a pupil who scored 2,

(f) a pupil who scored at least 2 but not more than 4.

Answer **(a)** $n =$ _____ [1]

(b) _____ [1]

(c) _____ [1]

(d) _____ [2]

(e) _____ [1]

(f) _____ [2]

–End–

Solutions to Revision Test 2

1. **(a)** $MK^2 = LK^2 - ML^2$

$= 8.9^2 - 6.8^2$ [1]

$= 32.97$

$MK = \sqrt{32.97}$

$= 5.742$

≈ 5.7 cm (1 d.p.) [1]

(b) $\triangle KMN$ and $\triangle LKN$ [1]

(c) Since $\triangle KMN$ and $\triangle LMK$ are similar,

$\frac{MN}{MK} = \frac{MK}{ML}$

$MN = \frac{5.742}{6.8} \times 5.742$ [1]

$= 4.849$

≈ 4.8 cm (1 d.p.) [1]

2. **(a)** Volume of the pyramid $= 400$ cm^3

$\frac{1}{3} \times$ area of $ABCD \times$ height $= 400$

$\frac{1}{3} \times 10 \times 10 \times VN = 400$ [1]

$VN = 12$ cm [1]

(b) $VM^2 = VN^2 + NM^2$

$= 12^2 + 5^2$

$= 169$ [1]

$VM = 13$ cm [1]

(c) Total surface area of the pyramid

$= 4 \times$ area of $\triangle VCB +$ area of $ABCD$

$= 4 \times \frac{1}{2} \times VM \times BC + CD^2$

$= 2 \times 13 \times 10 + 10^2$ [2]

$= 360$ cm^2 [1]

3. **(a)** Total number of pupils $= 35$

$2 + 5 + 10 + n + 8 + 3 = 35$

$n = 7$ [1]

(b) Modal score $= 2$ [1]

(c) Position of median $= \frac{35 + 1}{2}$th

$= 18$th

Median score $= 3$ [1]

(d) Mean score

$= \frac{0(2) + 1(5) + 2(10) + 3(7) + 4(8) + 5(3)}{35}$ [1]

$= 2.66$ (3 s.f.) [1]

(e) P(score $= 2$) $= \frac{10}{35}$

$= \frac{2}{7}$ [1]

(f) P(score $= 2$, 3 or 4) $= \frac{10 + 7 + 8}{35}$ [1]

$= \frac{5}{7}$ [1]