

## Worksheet 2015-8 ER-00003(1)

(1) Use quad paper or graph paper and draw the following on the same Cartesian plane:

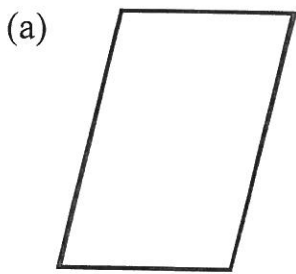
(a) M and N, for M as the reflection of N(-1 ; 5) in the y-axis.

(b) ST and S'T' with S(1 ; 2) and T(2 ; 5) if  $ST \rightarrow S'T'$  is a rotation of  $180^\circ$ .

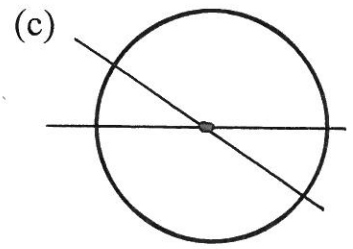
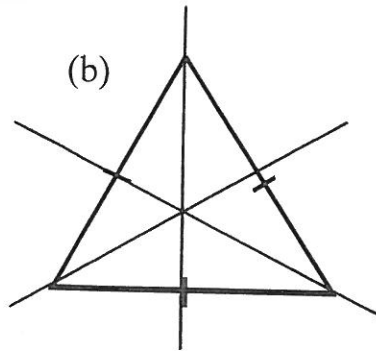
(c)  $\Delta ABC$  translates 4 units upwards and 5 units to the left.

Draw both  $\Delta ABC$  and  $\Delta A'B'C'$ . A(4 ; 1), B(4 ; -5) and C(2 ; -5)

(2) Draw at least THREE lines of symmetry in on each figure, if possible:



No symmetry



Any diameter.

(3) If the scale on the map is 1:700 000, calculate the true direct distance (as the crow flies), between Melmoth and eShowe.

Melmoth  $\rightarrow$  eShowe = 55 mm

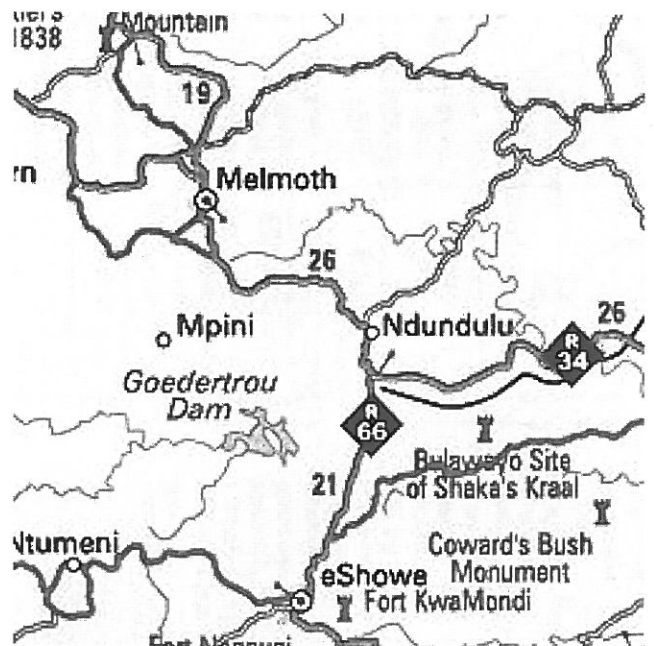
Map Land

1 mm = 700 000 mm

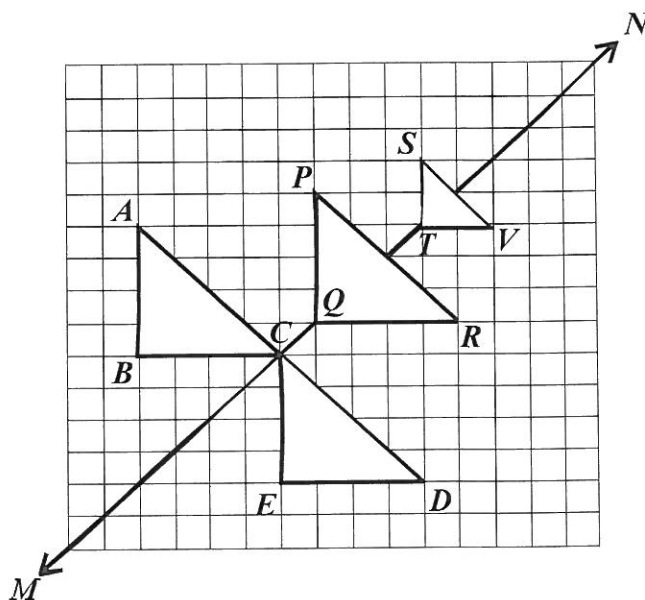
$\therefore 55 \text{ mm} = 38\,500\,000$

$\therefore 55 \text{ mm} = 38,5 \text{ km}$

$\therefore$  Melmoth is 38,5 km from eShowe.



- (4) (a) Is  $\triangle ABC$  a reflection of  $\triangle CDE$  in the line  $MN$ ?
- (b) Is  $\triangle ABC$  a translation of  $\triangle PQR$ ?  
If so, describe the translation.
- (c) Is  $\triangle ABC$  an enlargement / reduction of  $\triangle STV$ ? If so, write the factor of enlargement / reduction.



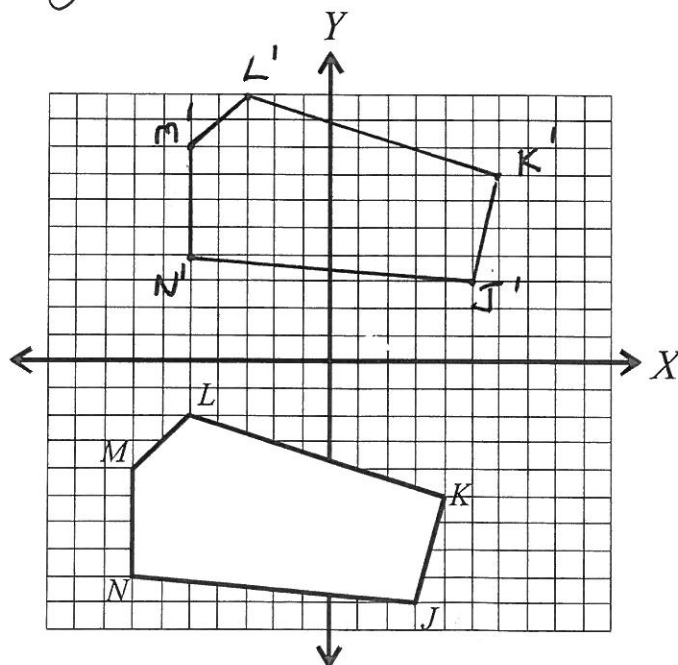
(a) yes

(b) yes, translate 5 left and 1 down.

$\triangle PQR \rightarrow \triangle ABC$

(c)  $\triangle STV \rightarrow \triangle ABC$  : enlargement of factor 2

- (5) (a) Write the coordinates of J, K, L, M and N.
- (b) Draw  $J'K'L'M'N'$  if  $JKLMN \rightarrow J'K'L'M'N'$  as a translation of:  $(x + 2 ; y + 12)$
- (c) Write the coordinates of  $J', K', L', M'$  and  $N'$ .



(a)  $J(3; -9)$        $L(-5; -2)$        $N(-7; -8)$   
 $K(4; -5)$        $M(-7; -4)$

(b) See graph!

(c)  $J'(5; 3)$        $L'(-3; 10)$        $N'(-5; 4)$   
 $K'(6; 7)$        $M'(-5; 8)$

(6) Scale 1:15 000

If necessary, round off correct to 4 dec.

- Calculate the distance (in km) of Zita street, between Gert Potgieter street and Petronella street.
- Calculate the area of Zita Park in  $\text{km}^2$ .
- Determine what the scale will be if the actual distance of Zita street between Len Brown street and Petronella street, is 770 m.



$$(a) \text{ Zitastr.} = 40 \text{ mm}$$

|     |  |      |  |
|-----|--|------|--|
| Map |  | Land |  |
|-----|--|------|--|

|      |   |           |  |
|------|---|-----------|--|
| 1 mm | = | 15 000 mm |  |
|------|---|-----------|--|

|         |   |            |  |
|---------|---|------------|--|
| ∴ 40 mm | = | 600 000 mm |  |
|---------|---|------------|--|

|         |   |        |  |
|---------|---|--------|--|
| ∴ 40 mm | = | 0,6 km |  |
|---------|---|--------|--|

$$(b) \text{ Zitapark} = 12 \text{ mm} \times 10 \text{ mm}$$

|     |  |      |  |
|-----|--|------|--|
| Map |  | Land |  |
|-----|--|------|--|

|           |   |                |  |
|-----------|---|----------------|--|
| but 12 mm | = | 12 × 15 000 mm |  |
|-----------|---|----------------|--|

|  |   |            |           |
|--|---|------------|-----------|
|  | = | 180 000 mm | = 0,18 km |
|--|---|------------|-----------|

|           |   |                |  |
|-----------|---|----------------|--|
| and 10 mm | = | 10 × 15 000 mm |  |
|-----------|---|----------------|--|

|  |   |            |           |
|--|---|------------|-----------|
|  | = | 150 000 mm | = 0,15 km |
|--|---|------------|-----------|

|                 |   |                   |  |
|-----------------|---|-------------------|--|
| ∴ Area Zitapark | = | 0,18 km × 0,15 km |  |
|-----------------|---|-------------------|--|

|  |   |                     |  |
|--|---|---------------------|--|
|  | = | 0,027 $\text{km}^2$ |  |
|--|---|---------------------|--|

$$(c) \text{ Map} \quad \text{Land}$$

|       |   |       |  |
|-------|---|-------|--|
| 25 mm | = | 770 m |  |
|-------|---|-------|--|

|       |   |                      |  |
|-------|---|----------------------|--|
| 25 mm | = | 770 000 mm (× 1 000) |  |
|-------|---|----------------------|--|

|                 |   |                       |  |
|-----------------|---|-----------------------|--|
| $\frac{25}{25}$ | = | $\frac{770\,000}{25}$ |  |
|-----------------|---|-----------------------|--|

Scale 1 : 30 800

