For questions 1-5 YOU MUST USE A RULER!

(1) The diagram below shows a picture of 3 Russian Dolls.

The difference in the size of the large doll to and the small doll in real life is $25cm$. Find an estimate for the height of the medium sized doll.

(2) The diagram below shows a map.

(a) Using the scale $1cm = 2km$ find the distance from the Harbour to the Port.
(b) The Castle is due north of the Harbour and due West of the Port. Draw the position of the Castle on the diagram.

(3) The diagram shows a large photo of a man and a smaller sized copy of the photo.

(a) The real large photo is $1.26m$ high. Find an **estimate** for the height of the smaller photo.
(b) **Estimate** the width of the smaller photo.

(4) The diagram below shows the point A.

$$A .$$

The point B is $6km$ due east of A. Using the scale $1cm = 1.5km$, mark B on the diagram.

(5) The drawing below shows a rectangle. The real length of the rectangle is $12m$. Find an estimate for the area of the real rectangle.

(6) A model aircraft has the scale $1:72$. The diameter of the wheel on the real aircraft is $80cm$. Find the diameter of the wheel in cm correct to 3 decimal places.

(7) The scale on a map is shown below
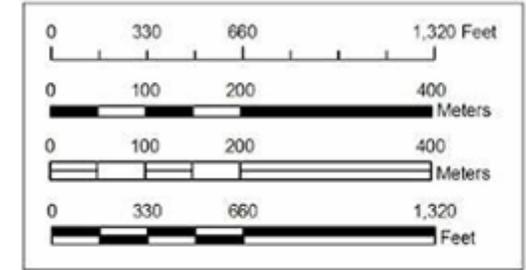
Use the scale to convert $300m$ into feet.

(8) Two different maps are printed on separate pieces of $A4$ paper. Map A has a scale of $1:3000$ and Map B has a scale of $1:4000$. Which map will show the most area?

(9) A model car has a scale of $1:24$ The length of the model is $14.8cm$. Find the length of the real car.

(10) Bill has a model car which has a scale of $1:32$ to a real car.
(a) Bob has a model car that is ½ the size of Bill's. What is the scale of Bob's model car to the real car?
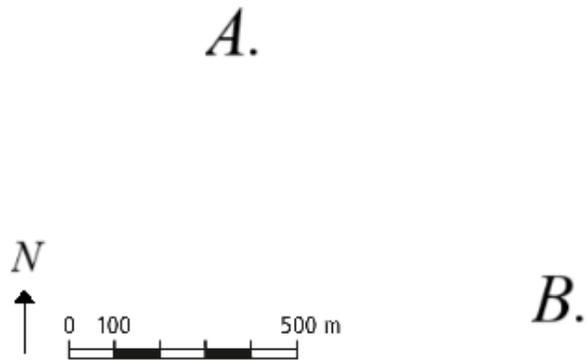(b) The difference between the length of the two model cars is $8cm$. What is the length of the real car?

(11) A map has the scale $36:71$. Write the scale in the form $1:n$

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YOU MUST USE A RULER, PENCIL AND PAIR OF COMPASSES.
YOU MUST ALSO LEAVE ALL CONSTRUCTION MARKS.

(1) The diagram below shows the points A and B which are two different towns.

A.

N

0 100   500 m

B.

(a) Measure the bearing of B from A.
(b) Write down the bearing of A from B.
(c) Find the actual distance between A and B
(d) Town C is $400m$ due south of A. Mark C on the diagram.
(e) A new road is built and is equidistant from A and B. Draw the new road on the diagram.
(f) Fred lives withing $300m$ of Town A. Shade the area where Fred could live.
(g) Janet lives $1km$ on a bearing of 340^0 from B. Mark where Janet lives on the diagram.
(h) Find the maximum distance in km between where Janet and Fred live.
(i) Petra lives due Northwest of B. Could Petra and Fred live in the same place?
(j) D is $200m$ due West of A. Find the bearing of B from D.

(2) The point X is shown on the map below. The scale of the map is $1cm = 2km$.

X.

N

(a) The point Y is $5km$ from X on a bearing of 135^0. Draw Y on the diagram.
(b) The point Z is due North of Y and East of X. Find the distance from X to Z in km.
(c) The point W is no more than $1km$ from X. What is the maximum distance of Y from W?
(d) U is due East of X and on a bearing of 060^0 from Y. Mark U on the diagram.
(e) Mark the points equidistant from U and Y.

(3) The diagram shows the point P, Q and R.

P.

.R

Q.

The point S is equidistant from the other 3 points. Mark S on the diagram.

(4) The diagram below shows the points H and K on a map.

H.

K.

N

The point L is $2cm$ from H and $3cm$ from K.
(a) Mark the two possible locations of L.
(b) Find the greatest possible bearing of L from H.
(c) The point M is due South of H and is on a bearing of 240^0 from K. Using the scale $1cm = 3km$, find the distance MK.

(5) The bearing of A from B is 235^0.
(a) Find the bearing of B from A.
(b) C is on a bearing of 135^0 from A and 210^0 from B. Draw the possible positions of A, B and C below.

(c) Find the ratio $AB:BC$
(d) Given $AB = 2km$, find the distance AC.