USING MICROSOFT EXCEL TO DRAW ACCURATE OGIVES, HISTOGRAMS AND FREQUENCY POLYGONS

Raadt P.K

Emang Mmogo Comprehensive School, Kimberley

TARGET AUDIENCE: FET – Educators of Mathematics and Mathematical Literacy.

DURATION: 2 hours

NO. OF PARTICIPANTS: Size of computer laboratory

HOW WILL THE TIME BE BROKEN UP?

Summary of time and content	
Length	Topics
50 minutes	Entering data on a spreadsheet Drawing an ogive.
40 minutes	Drawing a histogram.
30 minutes	Drawing a frequency polygon. Discussion .

MOTIVATION FOR RUNNING THE WORKSHOP

The aim of this workshop is to assist the educators who do not have the Autograph software to use the readily available software (Microsoft excel) to draw the statistical curves and graphs. It is a known fact that many educators use 'cut and paste' option when they finalise their test and examination papers and in the process producing a product that is below standard for learners and moderators.

The workshop will expose educators not only to drawing these curves and graphs but to accurately annotate copy and paste into Microsoft word for a professional final product.

DESCRIPTION OF THE ACTIVITY

Educators will be presented with grouped continuous data to enter into the spreadsheet cells and a step by step guide (worksheet) to use during the workshop and to take home. Throughout the workshop (all 3 sessions) educators will work with the same data items so as to immediately note the differences between ogive, frequency polygon and histogram.

USEFULNESS OF THE WORKSHOP

Hopefully the workshop will motivate the educators to use computer technology in teaching mathematics and in the administration in general.

_____

Using Microsoft Excel to accurately draw ogive, histogram and frequency polygon

Activity 1:

1. **Opening Microsoft excel**
   a. Click on start
   b. Go to programmes (all programs on windows *XP*)
   c. Go to Microsoft office
   d. Then click on Microsoft excel 2007 (a table consisting of cells will appear)

2. **Entering data on cells**

The following table shows the ages of people on a Transnet commuter train one Saturday morning from Kimberley to Bloemfontein.

Age (in years)	No. of people
$10 < A \leq 20$	37
$20 < A \leq 30$	59
$30 < A \leq 40$	156
$40 < A \leq 50$	172
$50 < A \leq 60$	143
$60 < A \leq 70$	75
$70 < A \leq 80$	22
$80 < A \leq 90$	10

   a. In order to draw the three graphs, we need to enter the following grouped continuous data in to cells

Age (in years)	Mid-point	Upper limit	frequency	Cumulative frequency
$0 < A \le 10$	10	5	0	0
$10 < A \le 20$	15	20	37	37
$20 < A \le 30$	25	30	59	96
$30 < A \le 40$	35	40	156	252
$40 < A \le 50$	45	50	172	424
$50 < A \le 60$	55	60	143	567
$60 < A \le 70$	65	70	75	642
$70 < A \le 80$	75	80	22	664
$80 < A \le 90$	85	90	10	674

Can you complete the last column by using excel and not a calculator?

OGIVE

b. Put the mouse pointer on cell C1, press the left mouse button and drag down to cell C10, release the left mouse button.

c. Then put the mouse pointer on cell E1, hold down the [CTRL] key and again with the left mouse button pressed, drag down to cell E10. Release the [CTRL] key and the mouse.

d. On Excel's Formatting Toolbar, click on the *insert* and then *Chart Wizard button* .

e. Click on *Scatter* icon and choose the *Scatter with straight lines and markers*. You should get the Ogive curve on the screen.

3. **Adding chart title, chart axis and data labels**

   a. Click on the curve

   b. On Excel's formatting Toolbar, click on the *layout*, *chart title* and then choose *centered overlay title*.

   c. Type the title of the curve.

   d. Click on the *axis titles*, *primary horizontal axis title*, then on *title below axis*.

e. Label the horizontal axis.

f. Repeat step d) and e) but this time choose the *primary vertical axis*.

g. Click on *legend* and choose *none* to turn off the legend.

h. To change the scale on your axis, click on *Axis* and change scale.

i. To change the thickness and colour of the line, move the cursor to the line and right click then click on *Format Data Series*.

    1. Click on *line colour* → *solid line* →*colour*

    2. Click on *Line style* → change *width* to your desirable thickness.

HISTOGRAM

Unlike ogives, which have upper limit on the horizontal axis, histograms are made using class interval on the horizontal axis.

a. Put the mouse pointer on cell A1, press the left mouse button and drag down to cell A10, release the left mouse button.

b. Then put the mouse pointer on cell D1, hold down the [CTRL] key and again with the left mouse button pressed, drag down to cell D10. Release the [CTRL] key and the mouse.

c. On Excel's Formatting Toolbar, click on the *insert* and then *Chart Wizard button* .

d. Click on *column* and choose the *clustered column*. You should get the bar graph that on the screen.

e. Follow steps 3(a)-(i) for labelling.

f. To change a Bar graph to Histogram follow the steps below:

    i. Right click on one of the bars, select [Format Data Point],

    ii. Change *series overlap*and *gap width* to 0%.

    iii. On the plot series box click the secondary axis. The bars should be close to each other →Histogram.

FREQUENCY POLYGON

Frequency polygons are made using midpoints on the horizontal axis.

  a. start by selecting the data in B1 through B10 and E1 through E10. Do this in the same way we did for histograms.

  b. On Excel's Formatting Toolbar, click on the *insert* and then *Chart Wizard button* .

  c. Click on *Scatter* icon and choose the *Scatter with straight lines and markers*. You should get the a frequency polygon curve on the screen.

  d. Follow steps 3(a)-3(i)