1) Explain the differences in meaning between the sentences in each group:

1

He likes his sister's friends and colleagues.

He likes his sisters' friends and colleagues.

He likes his sisters, friends and colleagues.

2

Her brother, who works in America, is a film extra.

Her brother who works in America is a film extra.

3

Rambo was dreadful.

"Rambo" was dreadful.

4

I don't watch television – much!

I don't watch television much.

5

They said it was marvelous.

They said it was marvelous!

They said it was marvelous!!

They **said** it was marvelous...

They said, "It was marvelous."

They said it was marvelous...

2) Read this film review and add punctuation if needed: commas, apostrophes, quotation marks, etc.

A Nightmare on Elm Street made one experienced journalist scream with terror at the preview screening I went to. The noise frightened me more than the film itself written and directed by Wes Craven an ex professor of humanities. Its all very spooky but not at all bloody says Wes of this teen orientated horror film which has a ghostly and ghastly murderer attacking the children of Elm Street not in their waking hours but in their dreams. John Saxon and Ronee Blakley dont believe all this and he a policeman goes looking for a real madman. But we know better and so does Heather Langenkamp as their daughter. Langenkamp apparently known in America as the worlds most promising Scream Queen screams louder than the journalist I just cringed. I think Craven has done better though one has to admit that its a good idea followed through with efficiency and state of the art special effects. Perhaps my trouble was that I wanted the Evil One to win. I cant stand those awful kids.

3) The original review was in FOUR separate paragraphs. Decide where to insert the paragraph breaks.

Adapted from Jones, Leo. *New Cambridge Advanced English*. Cambridge. 2000.

Class topic: TOUCHSCREENS

1) Do you use touchscreens? What are the devices utilizing touchscreens? What do you usually use it for?

2) Put the important events in touchscreen development in the correct chronological order.

1965 – 1970 – 1971 – 1982 – 1984 – 1993 – 2002 – 2007

a) Sony's SmartSkin introduces mutual capacitive touch recognition, thus improving capacitive touch technology
b) Apple introduces the iPhone
c) PLATO IV – the first touchscreen to be used in a classroom
d) First touchscreen phone, the Simon Personal Communicator, launched by IBM and BellSouth
e) First finger-driven touchscreen invented by E.A. Johnson
f) First multitouch device developed at University of Toronto
g) First official multitouch screen overlay (Bell Labs)
h) Dr. G. Samuel Hurst invents the first resistive touchscreen

3) Look at the article below and put its paragraphs into the correct order. The first and last paragraphs have been identified for you.

4) Match the words in bold from the text with their correct definitions below.

a) How wide something is

b) To adjust something for particular requirements

c) If there is a _____ of something, there is less of it than needed

d) Something that can be done successfully

e) To add details

f) Include something so that it is a part of something else

g) To print something/make something available to the public

h) A separate part of a process

i) To be greater than a particular number or amount

5) What are the advantages of touchscreen technology over other control methods (such as keyboard and mouse)? Can you also think of disadvantages?

Areas to consider: accuracy, speed, proximity to the screen, type of work required, or tiredness. However, do not be afraid to come up with your own ideas.

Adapted from Ion, Florence. "From touch displays to the Surface: A brief history of touchscreen technology." *Ars Technica.* 4 April 2013. WIRED Media Group.

Physicists Develop New Touchscreen Technology

Phys.org. 14 Sept. 2016. Science X Network. http://phys.org/news/2016-09-physicists-touchscreen-technology.html

1) *Physicists at the University of Sussex are at an advanced **stage** of developing alternative touchscreen technology to overcome the **shortfall** in the traditional display, phone and tablet material that relies on electrodes made from indium tin oxide (ITO).*

a) Previous research by Professor Dalton's group has shown that silver nanowires not only match the transmittances and conductivities of ITO films but **exceed** them. This makes the material very attractive for touch screens. However, the group have now shown, for the first time, that this type of nanomaterial is compatible with more demanding applications such as LCD and OLED displays.

b) The study, led by Sussex Professor of Experimental Physics Alan Dalton, investigates some of the intricacies of patterning silver nanowire films to produce detailed electrode structures. The paper, “Finite-size scaling in silver nanowire films: design considerations for practical devices,” is **published** in the journal *Nanoscale*.

c) Professor Dalton said: "Display technologies such as LCD and OLED form images using pixels. Each pixel of these displays is further broken down into subpixels; typically, one each for red, green and blue colours. In the display in a smartphone, for example, these subpixels are less than a sixth of the **width** of a human hair - which is also similar in length to the silver nanowires used in our research."

d) They have now shown that not only is the material suitable for touchscreens, but that it is possible to produce extremely small patterns (pixels), small enough for high definition LCD displays, such as smartphones and the next generation of television and computer screens.

e) Dr Matthew Large, the lead author of the paper, **expanded**: "In this research we have applied a mathematical technique to work out the smallest subpixel size we can make without affecting the properties of our nanowire electrodes. This method was originally developed to describe how phase changes like freezing happen in very small spaces, The results tell us how to **tune** our nanowires to meet the requirements of any given application."

f) In collaboration with their industrial partners, M-SOLV based in Oxford, the team – which is now looking to apply these research results to commercial projects – has also demonstrated that the **incorporation** of silver nanowires into a multi-touch sensor actually reduces the production cost and energy usage.

8) *Professor Dalton said: "Silver nanowire and silver nanowire/graphene hybrids are probably the most **viable** alternatives to existing technologies. Others scientists have studied several alternative materials, but the main issue is that the majority of other materials do not effectively compete with ITO or they are too costly to produce, at least at the moment."*