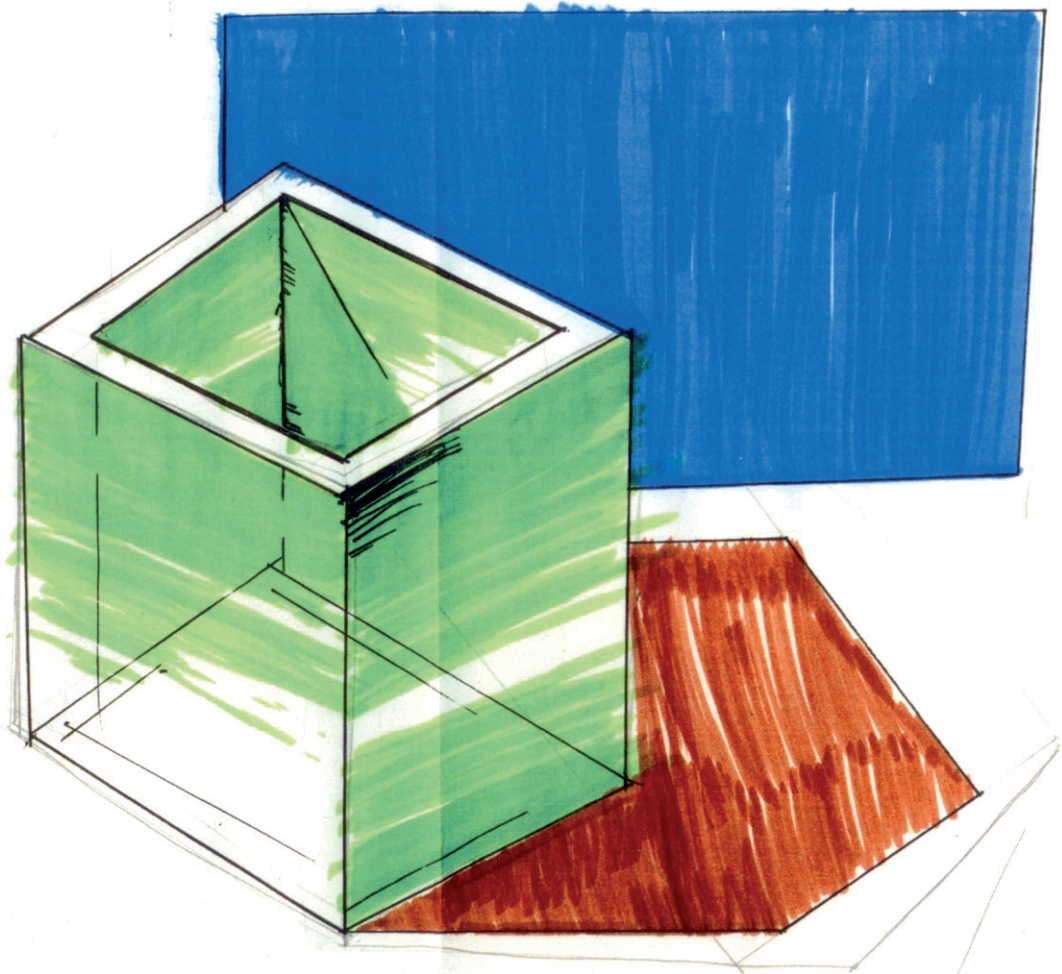
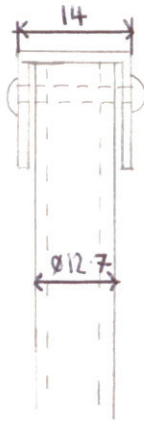


Kim Weigh

USB Lamp





Ø3mm
- insert Ø3mm silver steel
pin - file flush.

LED circuit board.
(79 x 11)

0.5mm
aluminium
sheet folded.

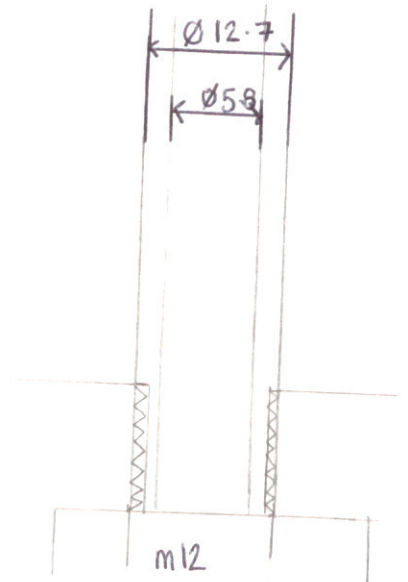
or

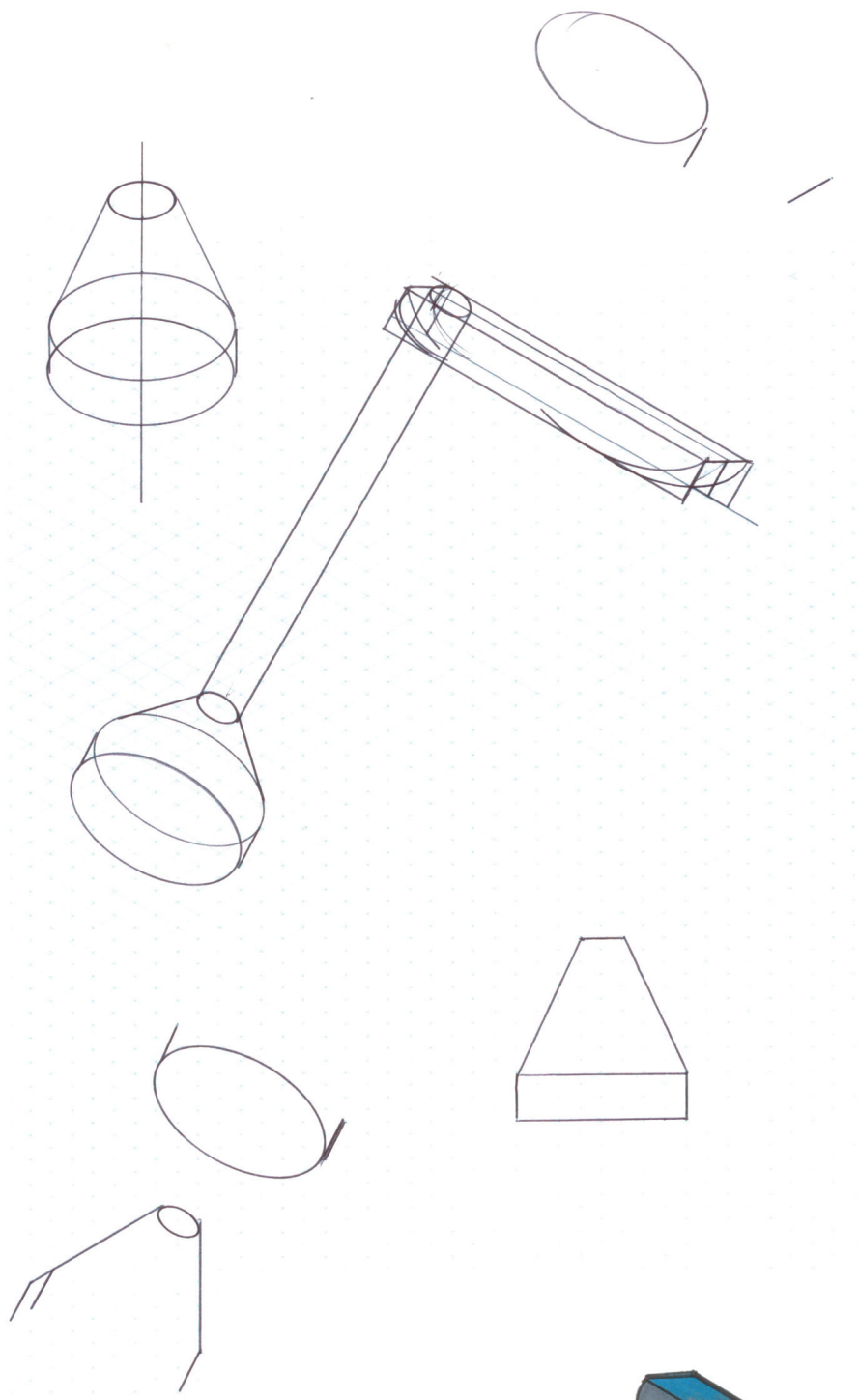
1mm steel
tube (13 x 13mm)

Ø12.7mm aluminium
tube.

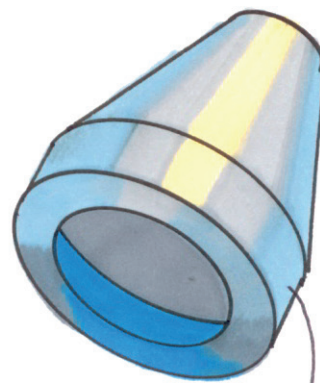
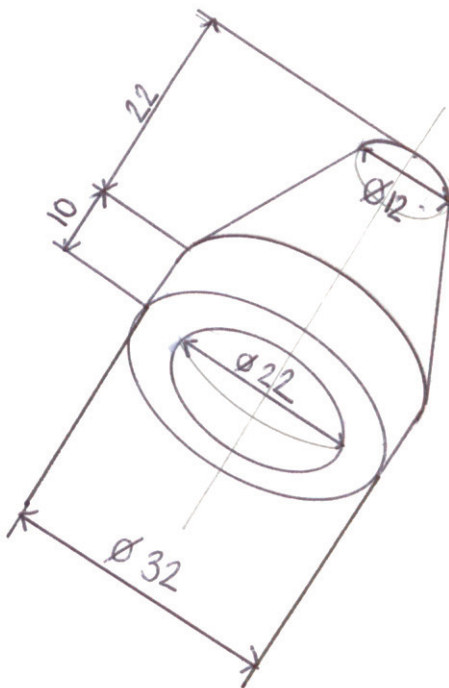
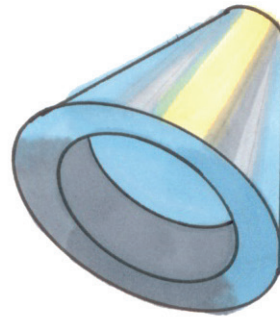
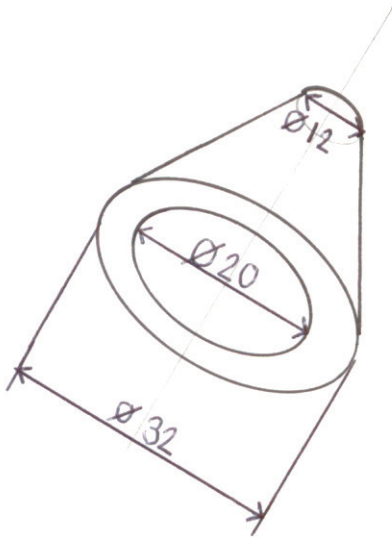
Ø32mm aluminium
bar (turned)

Knurl this section.





LAMP BASE



Dimensions to
be kept small.

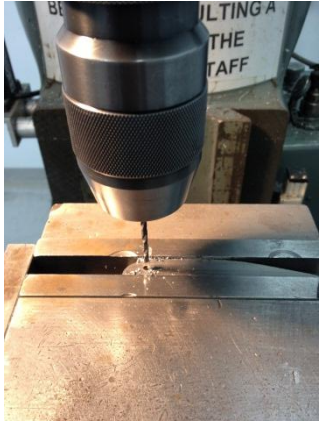
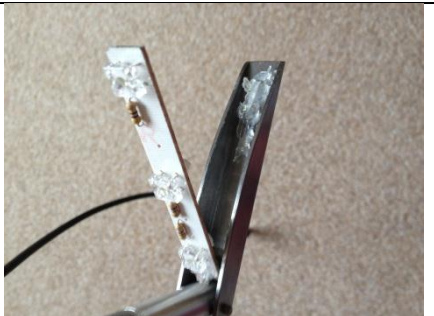
Flat Edge.
Incorporated to allow for
a cable exit hole and
easier parting off on lathe.

Kim Weigh – Design Communication: Metal Focus Learning Log

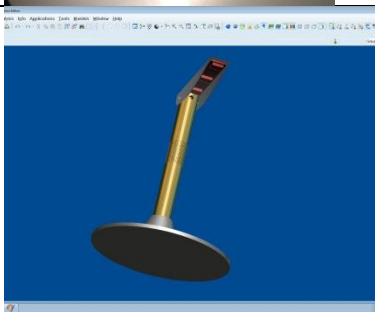
<i>Date</i>	<i>Activity</i>	<i>Learning Outcome</i>	<i>Evidence</i>
Weds 4 th Jan	Introduced to brief – started initial sketches for USB lamp	Developed concept sketch and annotated it in accordance to the specifications of the project brief.	
Friday 6 th Jan	Visited stores and looked at the materials available to use.	Gained an idea of the measurements of the aluminium bars and the dimensions of the aluminium sheet. Decided to use 12.7mm and 32.0mm aluminium bar.	

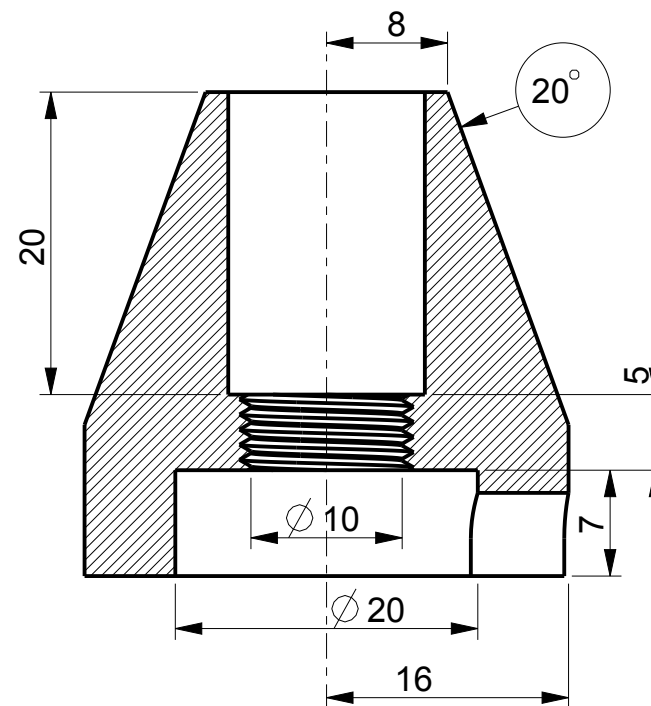
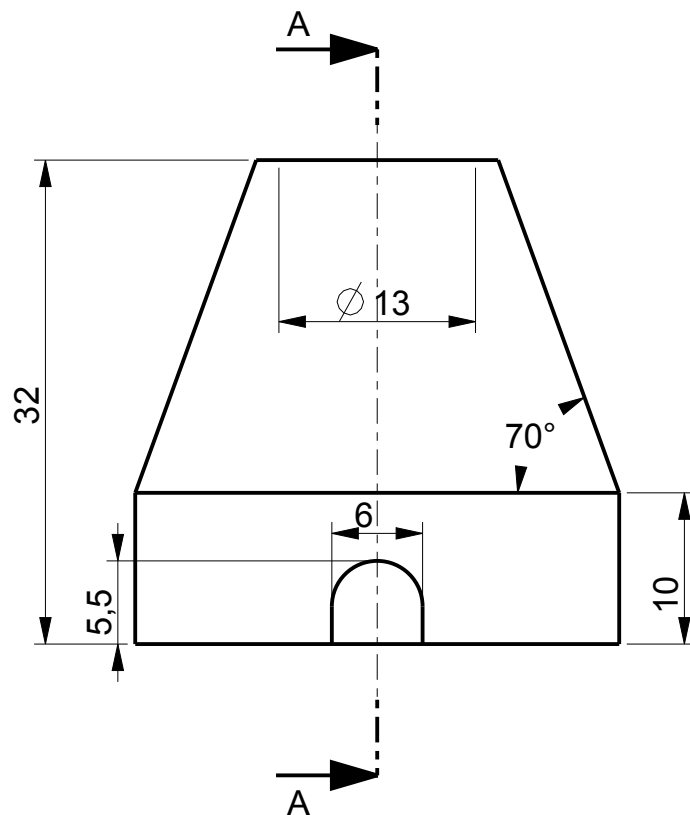
Monday 16 th Jan	Working on Centre Lathe to manufacture my lamp according to engineering drawings	Base is becoming to take shape: Drilled central holes Faced off both ends	
"	"	Using the tapping drill to create a thread I used the central spindle to hold the tap wrench true to gain an accurate finish.	
Tuesday 19 th Jan	Referred back to drawings	Adjusted the engineering drawing of the base slightly to incorporate a wider shoulder and also a less obscure angle	
Weds 18 th Jan (am)	Working on Centre Lathe to manufacture my lamp according to engineering drawings	Completed Base Shaped base to an angle of 20° by setting the cross slider	
"	Began making the lamp head	Used template to cut out shape of lamp head from 0.5mm aluminium sheet. I then filed this and started forming it but was unhappy with the appearance as it looked too thin and fragile against my engineered frame.	
"	"	Began working on "stem" Used the facing tool and horizontal feed to polish surface. Turned the end section (6mm) down to 12mm from 12.7mm to add the thread later	
Weds 18 th Jan (pm)	"	Used the knurling tool and a slow speed (40) horizontal feed to add a knurled section	See finished product.

		to the surface (this adds a gripping area to unscrew the stem from the base)	
Weds 18 th Jan (pm)	Threading	Using the die (m12) to create a thread (of 10.2) I used the central spindle to hold the die wrench true to gain an accurate finish.	
Weds 18 th Jan (pm)	Finishing the base and stem	-Whilst in the lathe- polished up end sections using emery cloth Then used the buffer to finish.	
Monday 23 rd Jan (pm)	Began making new lamp head from square steel tubing (aluminium was not available)	Stuck on the template for accuracy	
"	"	Cut vertical slots from the top of the tube to the template using the metal band saw. I then placed the tube vertically and cut out the sections between the slots to allow me to shape the metal	
"	"	Draw filed the lamp head to remove sharp edges and gain a consistent finish on both sides.	
Weds 25 th Jan (am)	Milling	Milled out the "U" shaped groove in my base for the cables to neatly exit.	

"	"	Drilled the holes in my lamp head and stem to allow a pin to attach my two parts together. Drilled a hole in the stem to allow for the cables to exit.	
Weds 25 th Jan (pm)	Lamp assembly	Cut down a piece of 3mm silver steel rod to act as a pin and experimented with different size washers to allow for leverage on the lamp head.	
Thursday 26 th Jan	Soldering Gluing	Soldered the circuit to the wires and glued the circuit board into the lamp head	
Friday 27 th Jan	Revisions	I was unhappy with how I had used the glue gun to secure the circuit in place as I thought this looked messy. I removed this but unfortunately the circuit became unattached from the wire so I will have to re-solder this on Monday.	
Monday 31 st Jan (am)	Re-soldering	I detached the lamp-head from the stem by removing the steel pin. I then had to strip back the wire again and re-solder the PCB strip. I also removed the glue and placed double sided sticky pads on the back of the PCB instead.	

Monday 31 st Jan (pm)	Assembly	Reattached the lamp-head to stem using the steal pin. I then ground this down and then filed it to achieve a flush finish.	
Monday 31 st Jan (pm)	Turning on the Centre Lathe to make a new flat addition the base to enable it to stand up without toppling over.	Turned a larger bar of aluminium (100mmØ) and faced-off the end.	
"	"	I had the bar cut down to 4mm in the stores. I then carefully trapped this in the chuck of the Centre lathe to face-off the other side.	
"	Finishing	The jaw teeth from the chuck marked my aluminium so I used emery cloth and a draw file to carefully sand away the marks.	

"	Assembly	Glued the new base to the original using "Loctite" glue. I then clamped everything in place and allowed the glue to dry.	
Weds 1 st Feb	Finalising project work.	Glued the LED strip in place and tested product.	
"	Printing and modifying CAD drawings	I returned to my CAD model and added the additional base. I also modified any changes to my working engineering drawings.	

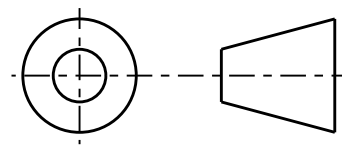


SECTION A-A

DO NOT SCALE - IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED
ALL SHARP EDGES AND BURRS TO BE REMOVED
SURFACE FINISH SPECIFICATIONS ARE TO BS 1134

TOLERANCE ON DIMENSIONS 0 +/- 0.50 UNLESS
TOLERANCE ON DIMENSIONS 0.0 +/- 0.20 OTHERWISE
TOLERANCE ON DIMENSIONS 0.00 +/- 0.05 STATED
TOLERANCE ON DIMENSIONS 0.000 +/- 0.02



THIRD ANGLE PROJECTION

DRAWN BY

DATE



Faculty of ACES - MDE
Sheffield Hallam University

TITLE

A4

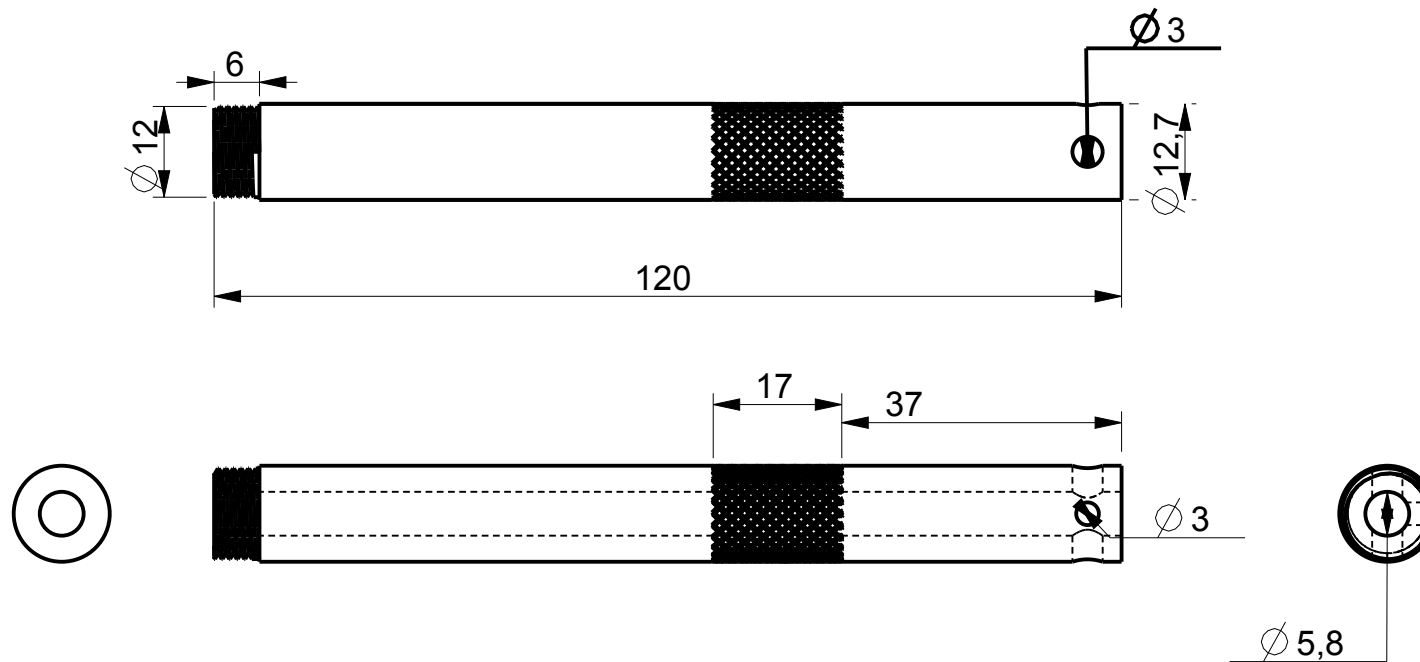
PROJECT

DRAWING

ISSUE
A

SCALE

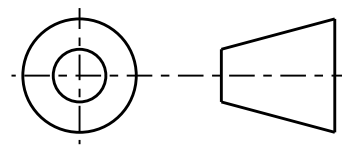
SHEET



DO NOT SCALE - IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED
ALL SHARP EDGES AND BURRS TO BE REMOVED
SURFACE FINISH SPECIFICATIONS ARE TO BS 1134

TOLERANCE ON DIMENSIONS 0 +/- 0.50 UNLESS
TOLERANCE ON DIMENSIONS 0.0 +/- 0.20 OTHERWISE
TOLERANCE ON DIMENSIONS 0.00 +/- 0.05 STATED
TOLERANCE ON DIMENSIONS 0.000 +/- 0.02



THIRD ANGLE PROJECTION

DRAWN BY

DATE



Faculty of ACES - MDE
Sheffield Hallam University

TITLE

A4

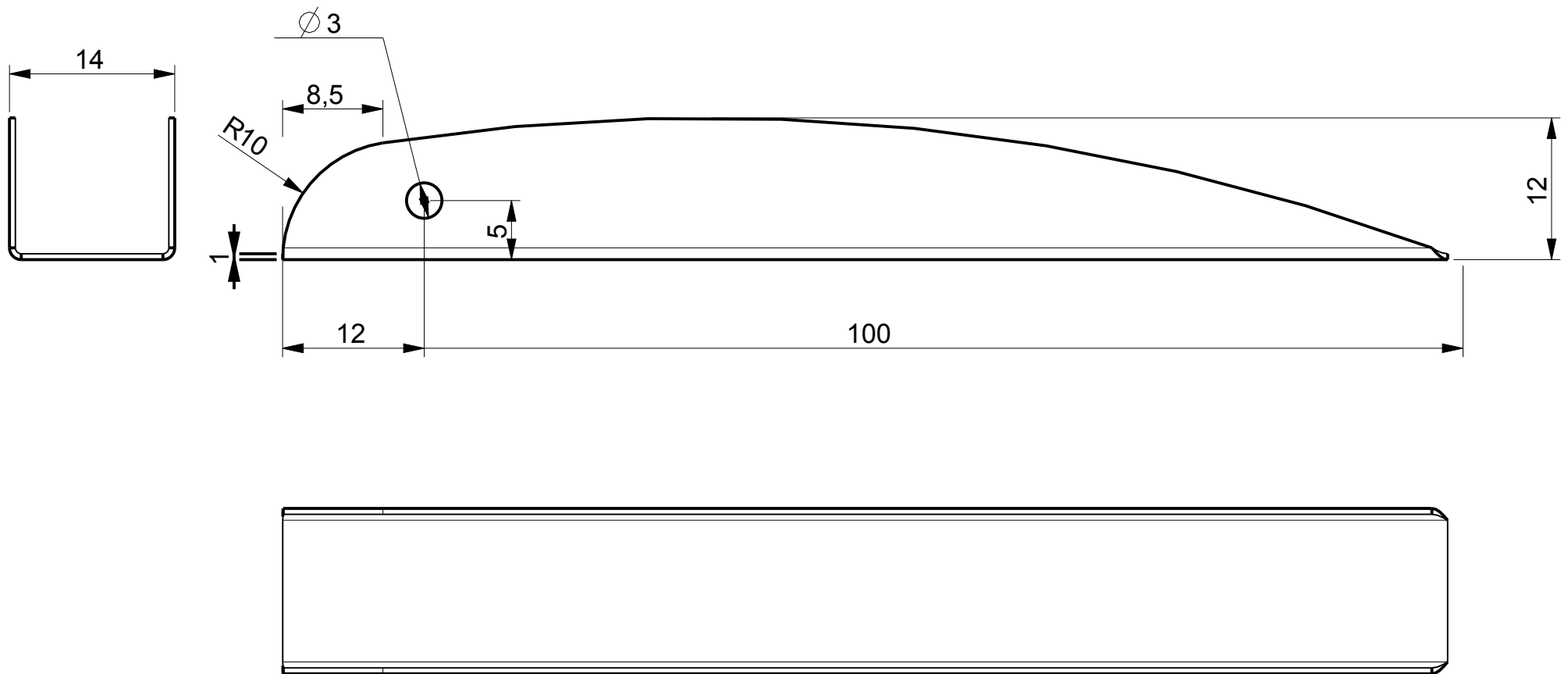
PROJECT

DRAWING

ISSUE
A

SCALE

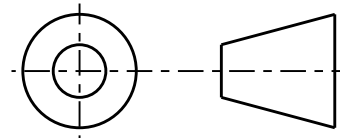
SHEET



DO NOT SCALE - IF IN DOUBT ASK

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED
 ALL SHARP EDGES AND BURRS TO BE REMOVED
 SURFACE FINISH SPECIFICATIONS ARE TO BS 1134

TOLERANCE ON DIMENSIONS 0 +/- 0.50 UNLESS
 TOLERANCE ON DIMENSIONS 0.0 +/- 0.20 OTHERWISE
 TOLERANCE ON DIMENSIONS 0.00 +/- 0.05 STATED
 TOLERANCE ON DIMENSIONS 0.000 +/- 0.02



THIRD ANGLE PROJECTION

DRAWN BY

DATE



Faculty of ACES - MDE
 Sheffield Hallam University

TITLE

A4

PROJECT

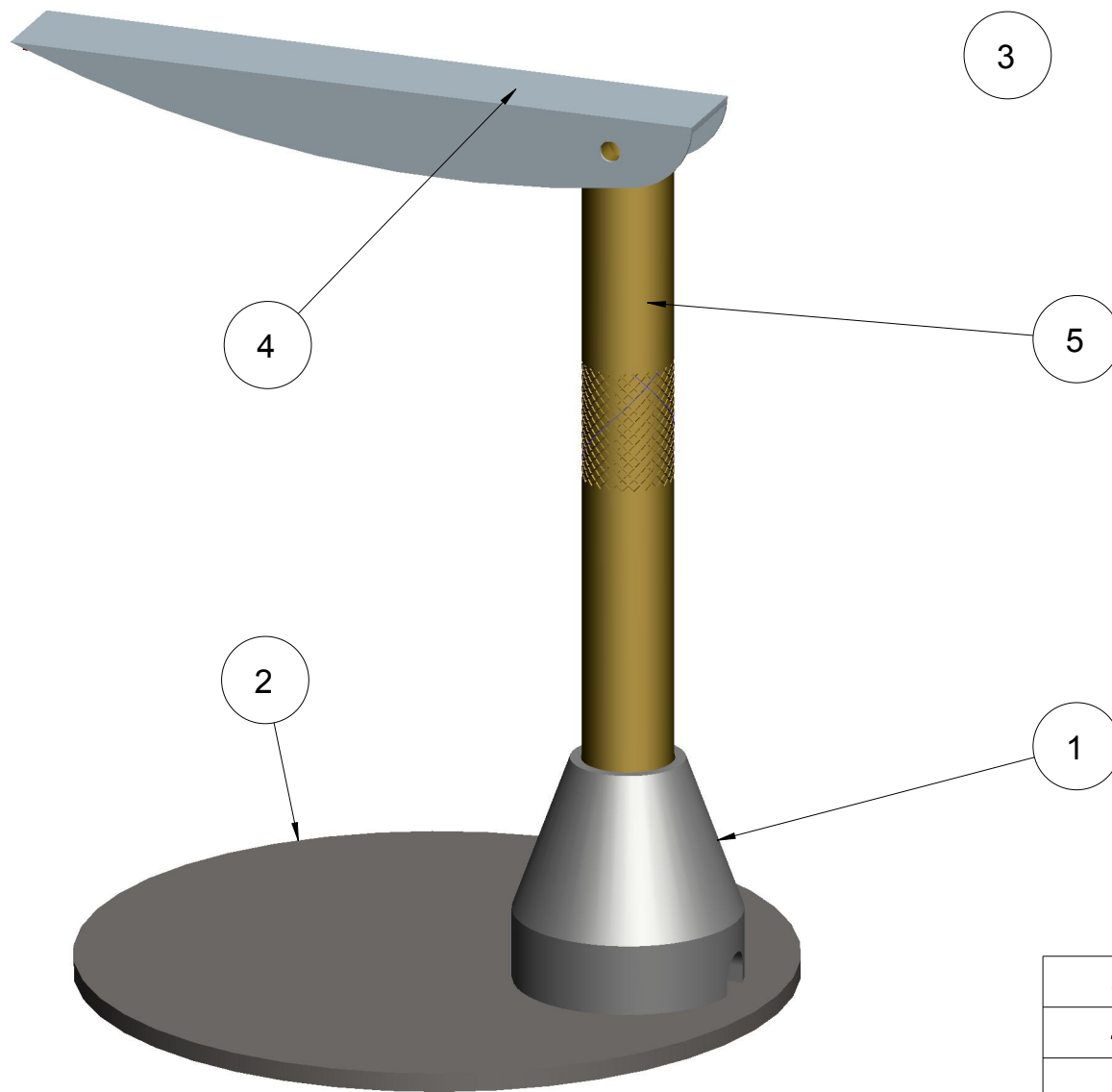
DRAWING

ISSUE
 A

SCALE

SHEET

USB LAMP



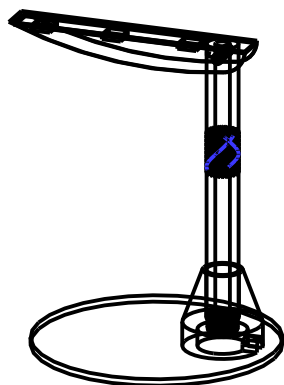
5	STEM	1
4	LEDCIRCUIT	1
3	HEAD	1
2	FLAT_BASE	1
1	BASE	1
INDEX	COMPONENT	QUANTITY

LAMP2

SCALE 1.000 @ A4

KW 11_01_12

TEXT STRING



LAMP2

SCALE 0.333 @ A4

KW 11_01_12

5	STEM	1
4	LEDCIRCUIT	1
3	HEAD	1
2	FLAT_BASE	1
1	BASE	1
INDEX	COMPONENT	QUANTITY

Kim Weigh – Design Communication: Metal Focus

End of Project Evaluation

Here I will assess my product in relation to the criteria set out in the brief.

<i>The lamp must:</i>	<i>Achieved?</i>	<i>Comments</i>	<i>Improvements</i>
Be made to the highest standard of manufacturing quality and finish	Yes	I have become confident working on the central lathe using techniques such as “facing-off” to gain highly polished finishes on the end surfaces of tubes. I also polished the stem and base on the lathe by skimming a small amount of material away by setting the horizontal feed on a slow setting to allow for accuracy. I am also satisfied with the precision of the threading within the stem and base as the stem screws into the base tightly. I learnt a lot through using the taps and dies. I also used the buffer to polish up the surfaces and shot blast the steel prior to polishing.	I would increase the length of threaded section in the stem and base to allow for an even tighter grip (as I only had 6mm)
Be mainly made from metal	Yes	I used both aluminium and steel in the manufacture of my lamp.	I would try and use an aluminium tube to create the lamp head rather than steel as this made the lamp-head heavy (aluminium was unavailable at the time of manufacture) Failing this I would manufacture the base from steel rather than aluminium to add a bit of weight and stability. This would have avoided me having to add the extra flat aluminium 100mmØ disc to the base.
Use the lighting PCB that is provided for you.	Yes	I developed my sketch with the measurements of this in mind. I was careful to consider where the wires would run	I am a little unhappy about just sticking the PCB into the lamp-head; I would have preferred to somehow screw this in place to incorporate

		and how they would enter and exit the lamp. I tried to keep my cable as hidden as possible and feel that the cables sit neatly within my design.	the engineered nature of the project. I would also increase the length of the overhanging sides of the lamp-head to shade the front LED which sticks out due to the curved shape of the lamp-head. (This wasn't obvious in my CAD model but once manufactured I wasn't too happy with this design element.)
Contain elements of turning, milling, drilling, screwing and knurling.	Yes	I developed my sketch with these elements in mind. I initially wanted to knurl the flat section of the base, however having shaped the base first I had not left enough material to hold the base steady in the chuck in order to knurl. Instead I knurled a section of the stem which actually worked better as it provided grip to screw the stem into the base.	None - I am satisfied that I have included these processes in my product and feel confident that I have gained new skills through applying these processes.
Be small enough for you to pay attention to fine detail and you are able to re-work any errors.	Yes	I kept the measurements small when sketching and applied these to my design.	I would increase the size of the initial base to steady my lamp rather than having to add the extra flat aluminium 100mmØ disc to the base.
Be of a suitable form and a prototype that could go into mass production.	Yes	Through incorporating the given manufacturing processes of turning, milling, drilling, screwing and knurling my product could be manufactured and assembled offsite using my engineering drawings.	I would perhaps use small counter-sunk screws to attach the flat aluminium 100mmØ disc to the original base rather than glue.
That the finished prototype is fabricated and that there is no welding involved in the assembly process.	Yes	I have kept the number of parts minimal to allow for ease of production/manufacture.	Same as above.