

## 3D Printer Quote (example only, information correct October 2015)

Purchasing and using a 3D printer depends entirely on the type of experience and support a department have. I have broken down the types of printer to fit in with the types of department and resources available. The good news is that companies such as Autodesk are offering the 3D software from the basic version to the full commercial versions free to schools. The software is also available to students for free to use at home. This means there are no costs for software unless you specifically want a CAD package such as SolidWorks or Creo but these are not necessary and funding is probably better used elsewhere. Personally I would recommend Quote 1 because it allows you to concentrate on teaching & learning rather than getting bogged down in the technicality of 3D printing.

---

### Quote 1 Summary of costs

Software and printer are based on limited or no knowledge of CAD/CAM or 3D printing with little technician support and training with the free 123D Design.

Training includes how to use the software, setting up a 3D-Printer, teaching and learning strategies for the teaching of CAD, as well as a range of digital teaching resources.

Description	Cost
Printer (Robox 3D)	£999
Training (up to 8 staff)	£1250
<b>Total (including VAT)</b>	<b>£2249</b>

Kitronik : Robox 3D Printer

<https://www.kitronik.co.uk/5401-roblox-fully-enclosed-compact-3d-printer.html>

---

### Quote 1 Details and requirement

This best suits a department with limited or no access to a permanent design & technology technician and more reliant on the teacher and pupils to sort out the day to day running

#### **RBX1 Robox® 3D printer**

1 Reel of Filament

Instruction manual

2 Year Warranty

Automaker™ Software

USB stick

USB cable

Build Volume

210 x 150 x 100mm

8.3 x 5.9 x 3.9"

Best layer resolution

20 microns

Nozzle Diameters

0.3mm and 0.8mm

0.012" and 0.031"

Material Compatibility

PLA, ABS, HIPS Nylon, PC, PVA

Supplied Software

Robox® AutoMaker™

Supported operating systems

Windows, Apple, Linux

## 3D Printer Quote (example only, information correct October 2015)

Computer requirements

Most recent hardware will run AutoMaker

Replaceable print head

### **123D Design (Free to download)**

This is more of a consumer version of the 3D software. Even though it is aimed more at a consumer level it is very easy to use and has the added benefit of being available for both Window and Mac as well as a cutdown version for the iPad that links to the full version. This is an excellent starting point for staff with little or no knowledge of CAD or 3D CAD in general. I have used this software in schools from Y5 to Y12. After using the software over a 12 month period it allows you to move to the more commercial and more complex versions as the basic processes are the same (these are also free to schools). Internet connection is not required but to gain access to all of the features web access is necessary.

- Windows 7 (32-bit or 64-bit); [which version do I have?](#)
- Intel® Pentium® 4 or AMD Athlon® 64 or later with 2 GHz+ processor; or

compatible

- 2+ GB RAM (1.5 GB minimum)
  - 1.5+ GB free disk space (for installation)
  - Direct3D® 9 or 10 graphics support with 64+ MB
-

## 3D Printer Quote (example only, information correct October 2015)

---

### Quote 2 Summary of costs

This best suits a department who have a good knowledge of CAD such as Techsoft 2D Design and good permanent technician support and training with free 123D Design Training includes how to use the software, setting up a 3D-Printer, teaching and learning strategies for the teaching of CAD, as well as a range of digital teaching resources.

Description	Cost
Printer (da Vinci 1.0 AiO 3D)	£457
Training (up to 8 staff)	£1250
<b>Total (including VAT)</b>	<b>£1707</b>

Mega Electronics: da Vinci 1.0 AiO 3D  
<http://www.mega.uk.com/3d-printer-for-schools.php>

---

### Quote 2 Details and Requirements

#### da Vinci 1.0 AiO 3D

FFF (FUSED FILAMENT FABRICATION)

Maximum build volume (WxHxD)

7.48 x 7.8 x 7.8 inch (19 x 20 x 20cm)

Software (XYZWare) File Types : .stl, XYZ Format

OS Supports : Windows XP (.Net 4.0 required), Windows 7+ Mac OSX 10.8 64-bit +

Note: A standard VGA driver on operating system required, or a graphics card that doesn't support OpenGL 2.1, may cause unknown error in XYZware software. Scan Software (XYZScan)

File Types : .stl, das Format

OS Supports : Windows 7+ Mac OSX 10.8 64-bit +

Hardware Requirements (for PC/Mac)

PC X86 32/64-Bit compatible PCs with 4GB+ DRAM

Apple Mac X86 64-Bit compatible Macs with 4GB+DRAM

Connectivity USB 2.0

Display Panel Type : 2.6" FSTN LCM Scanner Technique

Slit Laser Triangulation Dual Scan Engine: 2M Pixels Camera & Laser Diode Module

Scan Size (Ø x H): 5.9 x 5.9 inch (15 x 15cm)

Scan Accuracy: 0.25mm (250 µm)

Scan Resolution: 0.25mm (250 µm)

Turntable Payload: 6.6lb / 3kg (Max.)Print Head

SINGLE NOZZLE Nozzle Diameter: 0.4 mm

Filament Diameter: 1.75 mm

Filament Material: ABS/PLA Printing Mode Fine: 0.1 MM (100 Microns)

Standard: 0.2 MM (200 Microns)

Speed: 0.3 MM (300 Microns)

Ultra Fast: 0.4 MM (400 Microns)

#### 123D Design (Free to download)

This is more of a consumer version of the 3D software. Even though it is aimed more at a consumer level it is very easy to use and has the added benefit of being available for both Window and Mac as well as a cutdown version for the iPad that links to the full version. This is an excellent starting point for staff with little or no knowledge of CAD or 3D CAD in general. I have used this software in schools from Y5 to Y12. After using the software over a 12 month period it allows you to move to the more commercial and more complex versions as the basic processes are the same.

## 3D Printer Quote (example only, information correct October 2015)

Internet connection is not required but to gain access to all of the features web access is necessary.

**OR**

### **Fusion 360 (Free to download)**

This is a more advanced version of the 3D CAD package Fusion 360™ is a cloud-based 3D CAD/CAM tool for product development that combines industrial and mechanical design, collaboration, and machining in a single package. Fusion 360 enables fast and easy exploration of design ideas with an integrated concept-to-production platform. Access to the internet at all times from the user machine is required as some of the processing for the more advanced processes are handled by the Autodesk servers.

Supported Operating Systems:

Apple Mac OS X Mavericks (10.9) or later production versions

Microsoft Windows 7 SP1

Microsoft Windows 8.1

Microsoft Windows 10

Minimum System Specifications:

CPU: 64-bit processor (32-bit not supported)

Memory: 3GB RAM (4GB or more recommended)

A DSL internet connection or faster

Disk space: ~2GB

Graphics Card: 512MB GDDR RAM or more (except Intel GMA X3100 cards)

Pointing device: Microsoft-compliant mouse, Apple Mouse, Magic Mouse, MacBook Pro trackpad

## 3D Printer Quote (example only, information correct October 2015)

### Quote 3 Summary of costs

This best suits a department with some knowledge of 3D-CAD & permanent technician support. Two versions of the software are available depending on the quality of the computers to be used. Fusion 360 needs a good quality graphics and Inventor needs a good upto date quality computer with a minimum of 8mb RAM

Training in either 123D Design, Fusion 360 or Inventor. Training includes how to use the software, setting up a 3D-Printer, teaching and learning strategies for the teaching of CAD, as well as a range of digital teaching resources.

Description	Cost
Printer (Makerbot Fifth Generation Replicator 3D Printer)	£2639
Training (up to 8 staff)	£1250
<b>Total (including VAT)</b>	<b>£3889</b>

3D-Print Works: Makerbot Fifth Generation Replicator 3D Printer  
<http://www.3d-print-works.com/product/makerbot-fifth-generation-replicator/?gclid=Cj0KEQjwkeiwBRCzmo-wiKL49pEBEiQAhvGKYRJ4hggHMf4-PBHQr8OUM6jIHdolaYnOdwh2hN4Hy3saAteJ8P8HAQ>

### Quote 3 Details and Requirements

#### Makerbot Fifth Generation Replicator 3D Printer

**Print Technology** Fused Deposition Modeling

**Build Volume** 25.2 L x 19.9 W x 15.0 H cm [9.9 x 7.8 x 5.9 in] 7,522 cubic centimeters [456 cubic inches]

**Layer Resolution** 100 microns [0.0039 in]

**Filament Diameter** 1.75 mm [0.069 in]

**Filament Compatibility** MakerBot PLA Filament Large Spool 0.9 KG [2.0 lb]

**Nozzle Diameter** 0.4 mm [0.015 in]

Print File Type .makerbot

Ambient Operating Temperature 15-32°C [60-90°F]

Storage Temperature 0-38°C [32-100°F]

**Product Dimensions** 52.8 L x 44.1 W x 41.0 H cm [20.8 x 17.4 x 16.2 in]

**Shipping Box** 57.6 L x 52.1 W x 54.6 H cm [22.7 x 20.5 x 21.5 in]

**Product Weight** 16 kg [35.3 lbs]

**Shipping Weight** (includes Accessory kit) 20.8 KG [45.9 lbs]

**Construction** PC ABS with Powder-Coated Steel Reinforcement

**Build Surface** Glass with Blue Tape

**Stepper Motors** 1.8° Step Angle with 1/16 Micro-Stepping

XY Positioning Precision 11 Microns [0.0004 in]

**Z Positioning Precision** 2.5 Microns [0.0001 in]

**Software Bundle** MakerBot Desktop

**Supported File Types** STL, OBJ, Thing, MakerBot

**Operating Systems** Windows (7 ) Mac OS X (10.7 ) Linux (Ubuntu, Fedora)

**Power Requirements** 100–240V, 50–60 Hz 0.76-0.43 A, 100 W

**Connectivity** Wi-Fi, USB, Ethernet

Camera Resolution 320 x 240

## 3D Printer Quote (example only, information correct October 2015)

### **Fusion 360 (Free to download)**

This is a more advanced version of the 3D CAD package Fusion 360™ is a cloud-based 3D CAD/CAM tool for product development that combines industrial and mechanical design, collaboration, and machining in a single package. Fusion 360 enables fast and easy exploration of design ideas with an integrated concept-to-production platform. Access to the internet at all times from the user machine is required as some of the processing for the more advanced processes are handled by the Autodesk servers.

Supported Operating Systems:

Apple Mac OS X Mavericks (10.9) or later production versions

Microsoft Windows 7 SP1

Microsoft Windows 8.1

Microsoft Windows 10

Minimum System Specifications:

CPU: 64-bit processor (32-bit not supported)

Memory: 3GB RAM (4GB or more recommended)

A DSL internet connection or faster

Disk space: ~2GB

Graphics Card: 512MB GDDR RAM or more (except Intel GMA X3100 cards)

Pointing device: Microsoft-compliant mouse, Apple Mouse, Magic Mouse, MacBook Pro trackpad

**OR**

### **Inventor Professional (Free to download)**

Inventor Professional 3D CAD software offers an easy-to-use set of tools for 3D mechanical design, documentation, and product simulation. Digital Prototyping with Inventor helps you design and validate your products before they are built to deliver better products faster. This is a standalone package but will only run on Win 64bit machines that are quite powerful and usually have a higher specification than a usual basic computer

System Requirements for Autodesk Inventor 2016 Windows

Operating System Recommended:

64-bit Microsoft® Windows® 7 with Service Pack 1 or Windows 8.1 <sup>1</sup>

Minimum: 64-bit Microsoft Windows 7 with Service Pack 1

Supported:

64-bit Microsoft Windows 10 <sup>8</sup>

CPU Type Recommended:

Intel® Xeon® E3 or Core i7 or equivalent, 3.0 GHz or greater <sup>2</sup>

Minimum:

64-bit Intel® or AMD, 2 GHz or faster <sup>2</sup>

Memory Recommended:

16 GB RAM <sup>3</sup> or more

Minimum:

8 GB RAM for less than 500 part assemblies <sup>3</sup>

Disk Space Recommended:

250 GB free disk space or more <sup>3</sup>

Minimum:

100 GB free disk space <sup>3</sup>

Graphics Recommended:

Microsoft® Direct3D 11® or capable graphics card or higher <sup>4</sup>

Minimum:

Microsoft® Direct3D 10® capable graphics card or higher <sup>4</sup>

Other

## 3D Printer Quote (example only, information correct October 2015)

DVD-ROM <sup>5</sup>

1,280 x 1,024 or higher screen resolution

Internet connection for Autodesk® 360 functionality, web downloads, and Subscription Aware access

Adobe® Flash® Player 15 <sup>6</sup>

Microsoft® Internet Explorer® 8 or higher

Full local install of Microsoft® Excel 2007, 2010 or 2013 for iFeatures, iParts, iAssemblies, thread related commands, clearance/threaded hole creation, Global BOM, Parts Lists, Revision Tables, spreadsheet-driven designs and Studio animation of Positional Representations. Excel Starter®, Online Office 365® and OpenOffice® are not supported.

64-bit Microsoft Office is required to export Access 2007, dBase IV, Text and CSV formats.

Microsoft .NET Framework 4.5