Quick Printable (And Online) Puzzles

While making an online puzzle, I stumbled onto a way to make a printable puzzle at the same time! You can even make versions of the same puzzle with varying numbers of pieces without uploading the image multiple times.

I've been making online puzzles for many years, by uploading my photos to a website called Jigsaw Planet (jigsawplanet.com). I like the site for many reasons. Making a puzzle is free. Setting up an account is also free, but is not required in order to upload images and create puzzles.

It's easy, too: Press **Create** in the top bar, upload your photo, and with a few more clicks turn your photos into jigsaw puzzles! You choose how many and what shape the pieces will be as you create the puzzle, and you have the option to allow or disallow rotation of the pieces.

Once you've uploaded an image, either a photo or some artwork, chosen the options you want, and clicked the **Create** button, the finished online puzzle appears almost immediately, ready to use.

For a printable version of the same puzzle, line up the pieces, leaving a bit of space between them, and make a screenshot. That's most of what you need to make a printable puzzle for off-computer use.
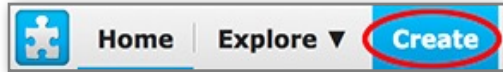
This tutorial explains in detail what options you have in creating the online puzzle, how to lay out the pieces and do a screenshot, how to trim, resize, and mount the puzzle layout, and how to separate the pieces to complete the project.

Want more free activities, tips, and graphics? Look in the Attic!

Make A New Online Puzzle

1. **Starting a puzzle** To make a new online puzzle, begin by going to the Jigsaw Planet home page (jigsawplanet.com). Clicking the **Create** button (top menu bar of the page) opens the **Create Puzzle** page where

 you can begin making a new puzzle by uploading a photo or a piece of original artwork.

Make sure the resolution of the image is high enough to look good on a typical full size screen. I find that 800 x 600 pixels is about the lower limit, and I've had no problem loading photos that are over 2,000 pixels wide. Image aspect (width to height ratio) is your choice. I tried a vertical photo that had been cropped to an odd size, and that worked just as well as one that's wider than tall or a standard size.
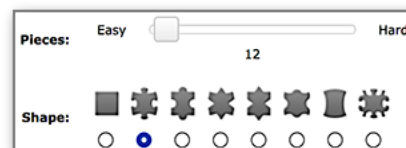
Quick Tip: Not sure about the size of your art or photo? My daughter Ellen has a good discussion about finding the image size here, in a tip which includes a link to an online editing app. She talks about several different ways to determine the image size, depending on your device and operating system. If still in doubt, upload your image to the online editor and the width and height will be labeled in the lower left. Then you can click a button that brings up a slider to resize, if needed.
Ellen's tip page: https://turbofuture.com/graphic-design-video/how-to-tell-an-images-size
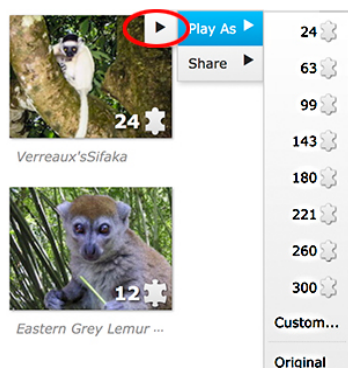
While Jigsaw Planet is flexible in regard to image size and shape, only a limited number of graphic formats will load. I've had success with .jpg and .png, even if the files were large. When I clicked **Browse** on the **Create Puzzle** page and tried to load .bmp,.psd (PhotoShop®), .gif, .tif, or PhotoShop .pdf, all those formats were grayed out.

2. **Options** Once you've selected a graphic file for your puzzle image, the next step is to type in a name for it. Take a minute to proof it, because I have not found a way to change the title, though maybe you can if you create a membership account. A slider lets you indicate how

many pieces the puzzle will have, there are eight choices for the shape of the pieces (all will be alike), and you can decide if the pieces are allowed to rotate.

One minor problem with the number of pieces has been around for a long time. Maybe it hasn't been detected and fixed because most people don't make puzzles with only a few pieces. If you choose 6, you get 6 pieces, but if you choose 9, you still get 6 pieces. Similarly, 12 pieces works but choose 15 and the puzzle has only 12 pieces. I've tried 20 and 24 pieces; those work normally. The piece shapes option works as expected. That last shape is a challenge! I have not tried using rotation with pieces, since I'm often making puzzles for younger students and sometimes for students with physical limitations.

You can set any puzzle to play one time with any number of pieces. This option is available from the puzzle preview thumbnail, or while the puzzle is open. These changes only apply during the current session; next time it's opened, a puzzle reverts to the original settings.

3. **Tags**   You are also invited to add tags to your puzzle. Unless you opened a membership account and you mark some of your puzzles private, anyone visiting the site can work your puzzles. It's probably worth adding a few tags to help visitors find them. If you note down the tags you added in your running record of the puzzles you make, it's a backup way to find puzzles if you lose the link. From the preview picture that comes up in a search, you can share the puzzle or get embed code without having to open the puzzle.

It wasn't obvious to me where on the site you could search using the tags until I found a **keyword search box** under **Explore/Popular Tags**. Then it was easy to pull up a screen with all of my puzzles that shared the same tag. For example, all my puzzles with photos from *Madagascar Adventures* have the tag **Madagascar**. So searching for that keyword is a quick way to access all 21 of the puzzles from that activity set.
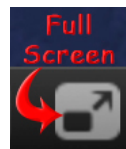
4. **Create the puzzle** Once you have marked the options you want for your puzzle, click the **Create** button. In a very few seconds, your finished online puzzle will open, all ready to use! Very important: **Copy the link to your puzzle**, especially if you chose to dispense with membership. It's a good idea to keep a running list of your puzzle links. Another option is to set up a menu page to make it easy for students to launch puzzles. Download **htmlTemplatesOnlinePuzzles.zip** from this page for templates and detailed tutorials.
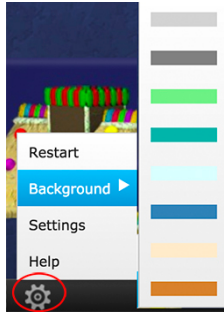
Turning Your Screenshot Into A Printable Puzzle

Now we will prepare to make a screenshot of the puzzle, from which

we'll make the printable version. All that is *absolutely* necessary is to arrange the pieces so they are not touching, but I like to put them in order for several reasons. First, I'm obsessive, and once worked in a library. Next, it's easier to identify the puzzle image if the pieces are in their proper places. Most important, placing the pieces in a tight rectangle wastes no space. That lets you print the pieces as large as possible.

1. **Arrange puzzle pieces** It's fairly easy to arrange the pieces in order, especially if you plan how many pieces across and down you will have before you start. To make it easier, **view your puzzle full-screen** by clicking the icon in the lower right. That gives you plenty of space to move the pieces around. Don't get them too close, though, or they will snap together!

You can temporarily change the background color to make the pieces stand out better, or just to use a color you like. When the puzzle is open, the **gear** icon on the bottom left gives you a menu from which you can choose **Restart**, **Background** (a menu of frequently used colors), **Settings** (such as preview position, open in full screen, many more background colors), and **Help**. Once the pieces are arranged neatly, you're all ready to make the screenshot.

2. **Make a screenshot** How you go about making a screenshot, also called a screen grab, depends on what device you are using. The following links probably include your device, but if not, do a search for "How do I make a screenshot on (your device)" and you'll find it. I've also made a single page reference sheet that you can download containing all these links.

Screenshot in Windows 7, 8, 10 https://www.lifewire.com/take-screenshot-windows-7-8-10-4049964

Screenshot on Mac, any version https://support.apple.com/en-us/HT201361

Screenshot on Chromebook https://www.laptopmag.com/articles/how-to-take-a-screenshot-on-a-chromebook

iPad, iPhone, iPod touch https://support.apple.com/en-us/HT200289

Screenshot on Android https://lifehacker.com/5994516/how-to-take-a-screenshot-on-android

3. **Trim and crop the screenshot** Open the screenshot in a graphics program such as PhotoShop®, PhotoShop Elements®, the free Gimp application, or something similar where you can discard any part of the screen grab outside the rectangle of puzzle pieces. In most graphic apps, you can do this trimming in a single step by making a rectangular selection around the pieces and using a **Crop** command.

Check the image size after cropping. Be sure to **resize** the puzzle image so that it fits onto a standard paper size your printer can handle. *Optional:* Make any other desired edits to enhance color, contrast, etc. Then save the trimmed puzzle image, preferably in a

folder with all your other printable puzzles.   That way if the puzzle wears out, you can quickly find it to print a new one!

If you made the screenshot on a mobile device, you might be enlarging the image to fill a standard sheet of paper. That's okay so long as the enlargement is no more than double. Any larger, and you will start to see deterioration in the appearance of the image. If possible, do the screenshots on a laptop or larger screen.

4. **Calculating the new size**   You need to plan what size you should set to resize the puzzle. There are two considerations: the **aspect ratio** of the paper sizes your printer can use, and the aspect ratio of the photo or artwork you used to make the puzzle.   (The layout of individual pieces won't have the identical ratio as the photo, but close enough.)The aspect ratio describes the shape of the outline of paper or photo (tall and narrow? square? wide and short?), and that stays the same when you enlarge or shrink it.
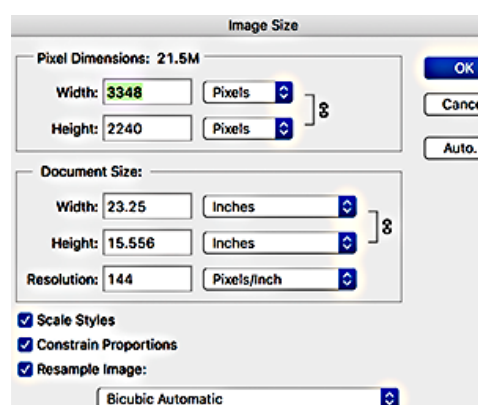
Choose the **paper size that is closest in shape** to your puzzle pieces image, then resize (and save) the image so it is just a little smaller than the paper. By filling up the paper, the puzzle pieces can be printed as big as is possible with your printer. It doesn't matter whether the puzzle is tall and narrow or wide and short. You can adjust by choosing **Portrait** or **Landscape** orientation in the print options.

For example, my printer prints only two sizes: 8.5 inch by 11 inch U. S. letter size, and the slightly longer 8.5 inch by 14 inch "legal" size, so I needed to resize my puzzles to fit onto one of those two standard paper sizes. Dividing the shorter side by the longer side, the letter size paper is about .77 (a little more than a 3 x 4 ratio) while the legal size is .61 (a little less than a 2 x 3 ratio). The trimmed puzzle screenshots, had about a 3 x 4 ratio, height to width. I could see that the letter size paper is the best fit for shape. That meant I needed to resize my puzzles to print out slightly smaller than 8.5 inches by 11

inches. Also, since my puzzles are wider than tall, I should plan on printing in Landscape orientation.

If your photos have a different aspect ratio, your puzzle files might fit better on that longer, legal size paper or on some other standard paper size. Figuring out the ratios is a bit complicated, but the nice part is, you'll most likely only have to do it one time. The same paper final size will work for all the photos from the same camera.

5. **Resizing the puzzle file**   For my printed puzzles, I did my resizing in PhotoShop®, but the procedure is about the same in any graphics program. Knowing the limits for width and height (11 in. x 8.5 in.) I needed to fit, I opened the dialog to change the image size. In PhotoShop, this dialog gives the dimensions in both pixels and inches, and also gives the resolution (I have the resolution set for pixels per inch). Most apps have a similar dialog.

For the new image width, I entered a number a bit less than the paper height in inches, since I would be printing it turned 90°. The application calculates what the proportionate image height should be, because I have **Constrain Proportions** active. Check that the calculated dimension also fits into the chosen paper size. If not, change the number for the new width slightly, or start again by entering the new image height first. That is, for both dimensions, the new image must be slightly less than the paper size so that nothing will be lopped off in printing.

When you reduce the size of an image, some pixels are discarded, and with them some fine detail is lost. There is a way to compensate for that: print the dots in the image closer together; that is, raise the resolution. In PhotoShop, the resolution in pixels per unit of length

(centimeters or inches) is part of the **Image Size** dialog, so it is easy to type in a larger number for the resolution. The effect is that even though the printed dimensions are smaller, most of the pixels are retained. Don't raise the resolution so much that the image pixel dimensions are increased above their original values.

6. **Save and print** When you have finished trimming, enhancing, and resizing, save the puzzle. Print out a copy to mount and cut apart, checking to see if you need to set it for **Landscape** orientation. To get the richest colors, you could print onto matt finish photo paper.

> **Tip:** If your graphics application allows, save the puzzle file as a .png, .tif, .psd (PhotoShop/PhotoShop Elements) or some other lossless format rather than as .jpg in case you ever need to edit the puzzle. Then you won't lose any quality with repeated saves. Also, give the file a name that includes the number of pieces.

7. **Finishing The Puzzle** Mount the printed puzzle piece layout on a stiff backing. Mat-board is a good choice, and you may be able to buy scraps cheaply from a craft or picture framing shop. You also could use cardboard, flexible plastic, or even card stock to stiffen the pieces.

The easiest way to separate the pieces is to cut vertical strips of pieces, next cut individual pieces roughly apart, and finish the detailed cutting of each piece with an x-acto® knife, manicure scissors, or the like. The most pieces I have set for my printed puzzles is 24. That's because I intend the puzzles for fairly young children, but also to save my fingers when I cut out the puzzles.

More Options Experiment with coating the mounted pieces with a clear coating, or applying a clear laminated cover over them. Test any liquid coating to be sure it won't cause the ink to run.

Outline a rectangle the size of the assembled pieces on cardboard, draw a second rectangle about an inch wider, cut out the narrow border, and mount it onto a piece of card stock or foamboard the size of the wider rectangle, to make a puzzle frame.

Put velcro® on the back of each piece, and assemble the pieces on a fuzzy backing.

I hope you have fun making puzzles, both online and printable. I've found that Jigsaw Planet kept the old links to all my puzzles even when they completely redesigned their site's layout using a new version of html! That means you can build up a growing library of online puzzles and expect them to continue to work over time. It also means you can go back and arrange the pieces to make a printable version of your puzzles any time you want. I think this is a great way to get double use out of your digital photos!