Amazon Kindle Publishing Guidelines

How to make books available for the Kindle platform

version 2015.2

This document describes the primary ways publishers, authors, and conversion houses can make their content available on the Amazon Kindle platform. This document includes guidelines and suggestions to ensure a smooth conversion and publication process.

Revision History

Revision Number	Revision Notes
2015.2	• Updated 2.2 Creating Kindle Books In-House Using Kindle Publisher Tools • Deleted 2.2.1 Kindle Plugin for Adobe InDesign • Updated 2.2.1.3 Using KindleGen • Updated 3.1.1 Text Guideline #1: Body Text Must Use Defaults • Updated 3.1.4 Text Guideline #4: Other Encodings Are Supported • Updated 3.1.5 Text Guideline #5: Use Supported Characters and Spaces • Updated 3.6.5 Image Guideline #5: Use GIF or PNG for Line-Art and Text • Updated 3.7.3 Table Guideline #3: Create Simple HTML Tables • Deleted 3.8 Adobe Digital Editions Compatibility Guidelines • Deleted 3.8.1 Adobe Digital Editions Compatibility Guideline #1: Use Unique Item IDs • Added 3.8.3 Styling Guideline #3: Design for a Good eBook Experience • Updated 4.1 Metadata Fields Supporting Fixed-Layout Books • Updated 11.2 Appendix B: CSS Selectors, Attributes, and Properties Supported in Kindle Format 8
2015.1	• Updated 8 Media Queries • Added 8.1 Media Query Guidelines (and subsections 8.1.1—8.1.5)

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1 Getting Started

There are several options for making your books available for the Amazon Kindle platform. Which option is best for you depends upon the nature of your publications (such as your source file format), your available resources and technical expertise, and your eBook sales model. To help you choose, here are examples of common publishing scenarios and recommendations:

- For self-publishers or authors who would like to take advantage of Amazon's self-service tools to create Kindle Books and sell them on Amazon, see section 2.1, Amazon's Kindle Direct Publishing Platform.
- For publishers with many titles to convert and the expertise to create Kindle books in-house using Kindle Publisher Tools software, see section 2.2, Creating Kindle Books In-House Using Kindle Publisher Tools.
- For publishers who do not wish to convert titles in-house or do not have the technical expertise to do so, outsourcing to a conversion house is described in section 2.3, Third-Party Conversion Services.

2 Paths to Getting Your Content on Kindle

2.1 Amazon's Kindle Direct Publishing Platform

Self-publishers can convert books into electronic format using Amazon's self-publishing tools and sell them on Amazon Kindle with Amazon's Kindle Direct Publishing Platform (KDP). KDP is a fast, easy self-publishing system for the Amazon Kindle. Upload your content, enter sales copy and pricing information, and publish in minutes. To learn more or sign up, visit http://kdp.amazon.com.

2.2 Creating Kindle Books In-House Using Kindle Publisher Tools

Publishers can create Kindle books in-house from HTML, XHTML, and EPUB files by using the Kindle Publisher tools. Amazon officially supports these tools to convert files to Kindle Format 8. Kindle files created with these tools are designed to be compatible with current and future Kindle devices and applications. Files created with third-party software may not work properly on current or future Kindle devices and applications.

2.2.1 KindleGen

Publishers can create Kindle books in-house by using a free software program called KindleGen. This is a command line tool designed for building Kindle ebook. KindleGen accepts source content in HTML, XHTML, or EPUB format.

The most recent version of KindleGen can be downloaded for free from www.amazon.com/kindleformat/kindlegen. Amazon periodically releases new versions of the KindleGen software. Check the site regularly for updates. To create books for Kindle Format 8, use KindleGen 2 or later versions.

2.2.1.1 Source Files to Use with KindleGen

To create Amazon Kindle files using KindleGen, you need:

- A single HTML file that represents the entire book; or
- EPUB-compliant files. (IDPF's EPUB spec is available at http://idpf.org/EPUB/30/spec/EPUB30-overview.html)

Using the EPUB spec, you can create a Kindle book with multiple HTML files and a single OPF file that links all of them together.

2.2.1.2 Installing KindleGen

IMPORTANT: Follow these steps to run KindleGen. Double-clicking the KindleGen icon does not launch this program.

KindleGen for Windows (XP, Vista, 7)

1. Download the KindleGen zip file from www.amazon.com/kindleformat/kindlegen to the desktop.
2. Right-click the zip file, select **Extract All,** and enter the folder name as **c:\Kindlegen**.
3. Open a command prompt by selecting **Start menu > All Programs > Accessories > Command Prompt.**
4. Type **c:\KindleGen\kindlegen**. Instructions on how to run KindleGen are displayed.

Conversion Example: To convert a file called **book.html**, use change directory (cd) to go to the directory where the book is located, for example **cd desktop**, and type **c:\KindleGen\kindlegen book.html**. If the conversion was successful, a new file called **book.mobi** displays on the desktop.

KindleGen for Linux 2.6 i386 or higher

1. Download the KindleGen **tar.gz** from www.amazon.com/kindleformat/kindlegen to a location such as the home (~) directory.
2. Extract it to **~/KindleGen**.
3. Open a command prompt and type **~/KindleGen/kindlegen**. Instructions on how to run KindleGen are displayed.

Conversion Example: To convert a file called **book.html**, use change directory (cd) to go to the directory where the book is located, for example, **cd desktop**, and type **~/KindleGen/kindlegen book.html**. If the conversion was successful, a new file called **book.mobi** displays on the desktop.

KindleGen for Mac OS 10.5 and above i386

1. Download **KindleGen.zip** from www.amazon.com/kindleformat/kindlegen. By default, the file is downloaded in the **Downloads** folder
2. Unzip the file. In Safari, the zip file is automatically unzipped after download. If this setting is disabled or if another browser was used, double-click the downloaded file to unzip it.
3. Click the spotlight icon in the top right corner and type **Terminal**. Click the application to open it.
4. To view the instructions on how to run KindleGen, locate the **kindlegen** program in the **Finder** window. Click and drag it to **Terminal** window where the cursor is. The cursor writes in the path and moves to the end of the line. Press **Enter** to view the instructions.
   - Alternatively, view the instructions by typing the command **cd ~/Downloads/KindleGen_Mac_i386_v2** in **Terminal** and then typing the command **kindlegen**.

Conversion Example:

1. To convert a file called **book.html**, copy **book.html** to the desktop.
2. In the **Finder** window, locate the **kindlegen** program. Click and drag it to the **Terminal** window, and drop it where the cursor is. The cursor inserts the path automatically and moves to the end of that line.
3. In the **Finder** window, locate the document. Click and drag it to the **Terminal** window, and drop it where the cursor is. The cursor writes in the path and moves to the end of the line. Press **Enter**. If the conversion was successful, a new file called **book.mobi** displays on the desktop.
   - Alternatively, convert the file by typing the command **cd ~/Downloads/KindleGen_Mac_i386_v2** in **Terminal** and then typing the command

kindlegen ~/Desktop/book.html. If the conversion was successful, a new file called **book.mobi** displays on the desktop.

2.2.1.3 Using KindleGen

To convert an EPUB or HTML book to the Kindle Format 8, use KindleGen version 2 or higher as described below:

```
kindlegen filename.opf/.htm/.html/.epub [-c0 or -c1 or c2] [-verbose] [-western] [-o
<file name>]

Note:

   zip formats are supported for XMDF and FB2 sources

   directory formats are supported for XMDF sources

Options:

   -c0: no compression

   -c1: standard DOC compression

   -c2: Kindle huffdic compression (recommended for large, text-heavy files)

   -o <file name>: Specifies the output file name. Output file will be created in the
same directory as that of input file. <file name> should not contain directory path.

   -verbose: provides more information during ebook conversion

   -western: force build of Windows-1252 book

   -releasenotes: display release notes

   -gif: images are converted to GIF format (no JPEG in the book)

   -locale <locale option>: To display messages in the selected language.

      en: English

      de: German

      fr: French

      it: Italian

      es: Spanish

      zh: Chinese

      ja: Japanese

      pt: Portuguese

      ru: Russian

      nl: Dutch
```

2.2.1.4 KindleGen Messages

As conversion progresses, KindleGen displays detailed informational messages. If KindleGen encounters issues while converting a file, it displays a warning or error.

Amazon strongly recommends fixing all KindleGen warnings and errors before publishing an ebook.

- If KindleGen displays an error, it will not create the .mobi file. Errors impair the readability of the book in the Kindle Reader.

- If KindleGen displays a warning, it will create the .mobi file with an attempt to automatically fix the issue described in the warning. Amazon does not guarantee the results of any KindleGen automatic fix, which could lead to the ebook displaying differently than designed.

2.2.2 Kindle Previewer Software

Kindle Previewer is graphical user interface tool that imitates how books display on Kindle devices and applications. Kindle Previewer makes it easy to preview the layout of a book and make sure its text displays properly for any orientation or font size. To produce the highest quality Kindle books, Amazon recommends this tool in combination with KindleGen.

Kindle Previewer is available for the Windows and Mac OS X platforms.

2.2.2.1 Installing Kindle Previewer

The most recent version of Kindle Previewer can be downloaded for free from www.amazon.com/kindleformat/kindlepreviewer. Installation and help documentation can be found at http://kindlepreviewer.s3.amazonaws.com/UserGuide.pdf.

Kindle Previewer for Windows (XP, Vista, 7, 8)

1. Download **Kindle Previewer for Windows** from www.amazon.com/kindleformat/kindlepreviewer.
2. Store the executable (**KindlePreviewerInstall.exe**) to the local disk.
3. Execute **KindlePreviewerInstall.exe** by double-clicking it.
4. Accept the EULA from the dialog box with details to install Kindle Previewer.
5. Kindle Previewer appears in **Start > Programs > Amazon > Kindle Previewer** after successful installation.

Kindle Previewer for Mac OS 10.6 and above i386

1. Download **Kindle Previewer for Intel Mac** from www.amazon.com/kindleformat/kindlepreviewer.
2. Save the zip file (**KindlePreviewer.zip**) to the local disk.
3. Double-click the zip file to unzip **Kindle Previewer**.
4. Drag **Kindle Previewer** from **Downloads** folder to **Application** folder.
5. Start **Kindle Previewer**.

Use F1 or the Help menu to find the Kindle Previewer User's Guide.

2.3 Third-Party Conversion Services

Publishers have the option to outsource conversion of titles from a variety of formats to eBook formats. Conversion houses offer publishers solutions and services that include taking a variety of input formats and creating eBook or print-ready output. The typical input formats are:

- Word (.DOC, .DOCX), Rich Text Format (.rtf), Text (.txt)
- PDF
- Scan of print book
- FrameMaker, InDesign, PageMaker, QuarkXPress
- XML (such as DocBook, etc.)
- HTML, XHTML
- EPUB (also known as IDPF or OEB)

The process of converting non-reflowable content (such as PDF or scans) to reflowable content is labor-intensive and requires specialized formatting knowledge.

As you explore conversion house options, Amazon recommends that you confirm which source format(s) the conversion house requires to convert files for use on Kindle.

The preferred outputs from conversion houses to be processed by Amazon are:

- Books in Amazon Kindle Format (.mobi/.prc)
- Metadata in ONIX format (XML)

Amazon can also process content in EPUB source format. KindleGen compiles the file and runs checks for common errors. Any errors or warnings will prevent the titles from becoming available. These errors must be fixed in the EPUB file before the title is published in the Kindle store. Titles in EPUB format must be tested on Amazon software and/or hardware and must abide by the publishing guidelines in this document.

Conversion houses can be of service in helping publishers supply eBook retailers with metadata. Search the web for “eBook conversion” to find a list of partners to work with.

3 General Formatting Guidelines

Kindle Format 8 (KF8) is the next generation file format (replacing Mobi 7) for Kindle books and supports HTML 5 and CSS 3. The following table outlines Kindle Format 8 features and device/application support:

Features & Benefits	All Kindle Devices and Apps except 1st & 2nd Generation Kindles and Kindle DX
Full support for CSS to enable publishers to control all elements of the text layout, including line spacing, alignment, justification, margin, color, style, & border.	Yes
Support for drop cap character at the beginning of paragraphs.	Yes
Support for floating elements that includes boxed text, callouts, sidebars, & images with text wrapping.	Yes
Support for numbered and bulleted lists.	Yes
Support for nested tables and merged cells required by technical and textbooks.	Yes
Support for background images on pages and for text on background images.	Yes
Support for Scalable Vector Graphics (SVG) that can be zoomed without loss of fidelity.	Yes
Support for embedded fonts that allows publishers to have a custom look & feel for the book.	Yes
Support for rounded corners of boxed elements.	Yes
Support for drop shadow.	Yes
Support for outline text.	Yes
Support for multiple and repeated background images.	Yes
Support for color gradient.	Yes
Enables fine-grained control of attributes for text and other elements through CSS selectors.	Yes
Support for fixed-layout pages for specified screen sizes.	Yes

There are important differences between writing HTML for websites and for Kindle books. To provide a good reading experience, many website design practices should be avoided when creating Kindle books. Refer to the following sections for more information.

Support for Chinese, Japanese, and Korean Text

Kindle devices newer than and including the Paperwhite and Fire HD support right to left vertical scripts and Japanese Ruby script. Older e Ink and tablet devices are limited to horizontal left to right Chinese, Japanese, and Korean text.

3.1 Text Guidelines

3.1.1 Text Guideline #1: Body Text Must Use Defaults

The body text in a reflowable Kindle book (fiction and non-fiction) must be all defaults. Amazon encourages content creators to use creative styles for headings, special paragraphs, footnotes, tables of contents, etc., but not for body text. The reason for this is that any styling on body text in the HTML will override the user's preferred default reading settings. Users report such behavior as a poor reading experience. Here are the most important points:

- Body text must use the default font size and line height. Body text should not use the `<font size="…">` tag or the font-size and line-height attributes in CSS.
- Body text should not be primarily bold or italicized. Selected parts of the text can be bold or italicized for emphasis. This guideline only prohibits a book from being entirely bold, for example.
- Body text should not have an imposed font color throughout the book. If you prefer to use imposed font color in some sections of your book, please do not use too light or too dark color. Light colors will not display with enough contrast on devices set to white backgrounds or on e Ink devices. Dark colors will not display well on devices set to black backgrounds. For grays, use colors within the hex value range of #666 to #999.
    - To determine if a color falls within this range, convert your color to RGB values using a tool such as http://hex-color.com/. Plug the resulting three numbers into the following formula: Y = 0.2126*R + 0.7152*G + 0.0722*B. If the value of Y falls within a range of 102 and 153, this color will create a good customer experience across Kindle devices and applications.
- Body text must not have a white or black font color. Customers report this as a bad user experience because the text can become invisible when the Kindle is set to the same background color as the font.
- Body text must not have a black or white background color. Customers report this as a bad user experience because it can create an awkward, boxy reading experience when the device background is set to a different color and because the text can become invisible when a user changes the background color setting on their device and the font color automatically inverts.
- Customers report that they enjoy having the option to select a preferred typeface from a list of device defaults.

3.1.2 Text Guideline #2: Use CSS for Page Breaks

Do not insert blank lines of text to create page breaks. Use the CSS `page-break-before` and `page-break-after` attributes.

3.1.3 Text Guideline #3: Formatting Paragraphs

KindleGen automatically indents the first line of every paragraph by default. To change this behavior, use the text-indent style on the <p> tag. For example:

- `<p style="text-indent:0">` - no indentation of the first line

- `<p style="text-indent:10%">` - positive indent, 10% of the width of the page
- `<p style="text-indent:5em">` - positive indent, 5 em

To change the space before each paragraph, use the `margin-top` style on the `<p>` tag.

3.1.4 Text Guideline #4: Other Encodings Are Supported

The source of a Kindle book can be encoded in many different ways. All encodings are supported, provided that:

- The encoding of the HTML files is clearly stated in the HTML; and
- The computer used for compiling the sources supports the encoding and knows how to convert it to Unicode.

Amazon recommends specifying the encoding of the HTML by using the `<meta>` tag in the `<head>` section or an XML declaration.

Method 1:

```
<html>

<head>

…

<meta http-equiv="content-type" content="text/html; charset=UTF-8">

…
```

Method 2:

```
<?xml version="1.0" encoding="UTF-8"?>
```

3.1.5 Text Guideline #5: Use Supported Characters and Spaces

Characters should be represented using plain text UTF-8 characters, except where XML entities are strictly required or are easier for humans to read than their character equivalents. For example, instead of using the `"&copy;"` entity, use the © character.

XML entities are strictly required for "<" (`&lt;`), ">" (`&gt;`), and "&" (`&amp;`).

The only supported spaces are the normal space, the non-breaking space (`&nbsp;`) and the zero-width non-joiner (`&zwnj;`). Use of any other space can break the selection, dictionary lookup, and line-wrap algorithms.

Do NOT use Unicode format characters, as they may cause problems.

3.1.6 Text Guideline #6: Monospaced Font Is Supported

Kindle uses a default font for content if none is specified; it also supports a monospaced font.

Kindle uses the monospaced font to render content in the following tags: `<pre>, <code>, <samp>, <kbd>, <tt>, <font face="courier">, <font face="monospace">.`

With the exception of `<pre>`, the tags listed above do not change the text alignment. If the content in these tags should be left-aligned, wrap the tags listed above in a `<div>` styled with CSS using `text-align:left`.

Publishers can include their own font for their content. Amazon has a quality assurance process to ensure that these fonts display well on e Ink-based devices and do not impair the reading experience. Do not include the Charis font; it is replaced with a higher quality font in the Kindle Readers.

3.1.7 Text Guideline #7: CSS Support

The earlier Kindle platform offered very basic support for Cascading Style Sheets (CSS). This has been significantly enhanced in KF8 with support for CSS 2/CSS 3. (See section 11.2 for the list of supported CSS attributes/selectors). To verify that your use of CSS elements displays the way you intended, preview your Kindle book on different devices before publishing it.

Avoid using fixed values such as points and pixels for CSS properties such as `font-size,` `width`, `height`, `margin`, `padding`, `text-indent`, and `line-height`. To enable rendering across various screen sizes and resolutions, specify these values in percentages.

When using the `margin` and `padding` CSS properties, specify the values in percentage (%) instead of em units. This ensures that the margins do not grow wide with large font sizes. Margins should be assigned values of 0 or greater to keep content from falling off the edge of the screen or overlapping other content. Always set left and right margins to 0 for normal body text to allow users the full range of margin selection using device defaults.

To ensure pagination, the Kindle Reader does not honor line-height value less than 1.2 em or 120%.

Elements such as drop caps should be specified using percentages or relative units (positive or negative) instead of fixed values such as points and pixels. (**Example:** drop caps: Use font-size: 300%). The top of the drop cap should be aligned with the body text. To create drop caps, Amazon recommends using the following sample CSS:

Example

```
p.para {
    font-family: "Times New Roman";
    font-size: 4em;
    margin-bottom: 0;
    margin-top: 0;
    text-align: justify;
    text-indent: 0;
}

@media  amzn-kf8
{
    span.dropcaps
    {
        font-weight:normal;
        font-size:320%;
        float:left;
        margin-top:-0.3225em;
        margin-bottom:-0.3245em;
    }
}

@media  amzn-mobi
```

```
{
    span.dropcaps
    {
        font-size:3em;
        font-weight: bold;
    }
}<p class="para"><span class="dropcaps">T</span>here is a sample
```

To verify that the drop caps display as intended, test the book as described in section 9.1, Testing Kindle Books.

3.1.8 Text Guideline #8: Page Numbers

Kindle books do not always map directly to page numbers in physical editions of the book. For this reason, there should not be any reference to page numbers in the book. Page numbers should not be included in cross-references or the index. Amazon may make page numbers available for books as additional book metadata. Amazon generates these page numbers based on its own internal technology.

3.1.9 Text Guideline #9: Customizing Font Selection

The primary or main font in a book should be set at the <body> level. If you prefer to use additional text styling such as bold or italics, ensure that the styles are set on the text rather than the font so that any font that the customer selects correctly displays these styling elements. Below are examples of both correct and incorrect implementation of customizing fonts in an ebook.

Incorrect HTML Code	Correct HTML Code
<html> <body> <p **style="font-family:PrimaryFont**"> Primary font content </p> <p style="font-family:SecondaryFont"> Secondary font content</p> <p **style="font-family:PrimaryFont**"> Primary font content </p> <p **style="font-family:PrimaryFont"**> Primary font content </p> </body> </html>	<html> <body style="font-family:PrimaryFont"> <p> Primary font content </p> <p style="font-family:SecondaryFont"> Secondary font content </p> <p> Primary font content </p> <p> Primary font content </p> </body> </html>

The same behavior can be achieved by using CSS classes as shown below.

Incorrect CSS Code	Correct CSS Code

body{
font-size: asize;
}
 	
.indent {
font-size: asize;
font-family: PrimaryFont;
}
 	
.sidebar-text {
font-family: SecondaryFont;
weight: bold;
}
	body {
	font-family: PrimaryFont;
	font-size: asize;
	}
	
	.indent {
	font-size: asize;
	}
	
	.sidebar-text {
	font-family: SecondaryFont;
	weight: bold;
	}

3.2 Cover Image Guidelines

3.2.1 Cover Image Guideline #1: Marketing Cover Image Is Mandatory

Kindle books must have a marketing cover image provided for use on the website detail page. The preferred format for the marketing cover is an image of 2560 pixels on the longest side and 1600 pixels on the shortest side with 350 dpi to ensure image clarity on Kindle HDX devices. The image file size should be 5MB or smaller.

If the marketing cover image size is smaller than the 2560 x 1600 recommendation, a reminder message is displayed at time of upload. Covers with less than 500 pixels on the smaller side are not displayed on the website.

If your cover image is smaller than the recommended size, Amazon strongly recommends that you create a new image that meets the size requirements. Do not stretch the image to meet the size requirements, because this may lower the image quality.

The content of the cover image must not:

- Infringe another publisher’s or artist’s copyright on the same cover.
- Mention pricing or other temporary promotional offers.

3.2.2 Cover Image Guideline #2: Internal Content Cover Image Is Mandatory

Kindle books must have an internal cover image provided for use within the book content. Provide a large, high-resolution cover, because Amazon quality assurance will fail the book if the cover is too small.

Define covers in the OPF file using either of the following methods (underlined elements are mandatory):

Method 1 (preferred):

```
<manifest>

...

  <item id="cimage" media-type="image/jpeg" href="other_cover.jpg" properties="cover-image"/>

...

</manifest>
```

This syntax is part of IDPF 3.0 standard and described at http://idpf.org/epub/30/spec/epub30-publications-20111011.html#sec-item-property-values.

Method 2:

```
<metadata>

...

<meta name="cover" content="my-cover-image" />

...

</metadata>

...

<manifest>

...

<item href="MyCoverImage.jpg" id="my-cover-image" media-type="image/jpeg" />

...

</manifest>
```

The use of `name="cover"` in the metadata element name is mandatory.

This syntax is not part of the IDPF standard, because the standard does not provide for cover images. However, it was designed with help from the IDPF and will validate in an IDPF validator.

3.2.3 Cover Image Guideline #3: Internal Cover Must Not Appear Twice

Do not add cover images to the content in any way other than those described in section 3.2.2, Cover Image Guideline #2: Internal Content Cover Image Is Mandatory, or the cover might appear twice in the book.

3.3 Table of Contents Guidelines

Amazon strongly recommends the use of an HTML TOC for all books that would benefit from this navigation feature. This applies to most books, with the exception of fixed-layout children's books (see section 4) and fixed-layout graphic novels/manga/comics (see section 5).

3.3.1 TOC Guideline #1: Logical TOC Is Recommended

Amazon strongly recommends that all Kindle books include both logical and HTML TOCs. The logical TOC is very important for a good reading experience, because it allows a reader to navigate between chapters easily. Users expect to see an HTML TOC when paging through a book from the beginning, while the logical TOC is an additional way for users to navigate books. The inclusion of a logical TOC is especially important for books that are longer than 20 pages.

Logical TOCs are generated using `toc nav` elements or a navigational control file for XML application (NCX). Creating a logical TOC exposes the hierarchical structure of a Kindle book and allows the user to navigate through it.

In logical TOC-enabled books, users can see where they are in the book because the part, chapter, or section is exposed. This progress indicator also shows relative progress through the book.

Important: Nested anchor tags are not supported in fixed-layout books. Fixed-layout books with nested anchor tags will be suppressed.

3.3.1.1 Creating a Logical TOC Using a toc nav Element

The `toc nav` element is part of the IDPF 3.0 specification and is described at http://idpf.org/epub/30/spec/epub30-contentdocs-20111011.html#sec-xhtml-nav-def-model and http://idpf.org/epub/30/spec/epub30-contentdocs-20111011.html#sec-xhtml-nav-def-types-toc.

Creating a `toc nav` element provides both a logical TOC and an HTML TOC.

Example:

```
<nav epub:type="toc">
<ol>
<li><a href="Sway_body.html#preface_1">AUTHOR'S NOTE</a></li>
<li><a href="Sway_body.html#part_1">PART ONE</a>
  <ol>
  <li><a href="Sway_body.html#chapter_1">THE HOUSES, 1969</a></li>
  <li><a href="Sway_body.html#chapter_2">ROCK AND ROLL, 1962</a></li>
  <li><a href="Sway_body.html#chapter_3">THE EMPRESS, 1928–1947</a></li>
  </ol>
</li>
</ol>
</nav>
```

The example above defines the following TOC hierarchy:

  AUTHOR'S NOTE
  PART ONE
    THE HOUSES, 1969
    ROCK AND ROLL, 1962
    THE EMPRESS, 1928–1947

This excerpt from the OPF (publication header file) shows how to declare the `toc nav` element in the `<manifest>`:

Example:

```
<manifest>
<item id="toc" properties="nav" href="xhtml/toc.xhtml" media-type="application/xhtml+xml"/>
```

Using it in the <spine> is optional if it will be used as the HTML TOC.

```
<spine>
<itemref idref="toc"/>
```

3.3.1.2 Creating a Logical TOC Using NCX

NCX is part of the IDPF 2.0 specification and is described at http://www.niso.org/workrooms/daisy/Z39-86-2005.html#NCX.

NCX Example:

```
<navMap>
<navPoint class="titlepage" id="L1T" playOrder="1">
<navLabel><text>AUTHOR'S NOTE</text></navLabel>
<content src="Sway_body.html#preface_1" />
</navPoint>
<navPoint class="book" id="level1-book1" playOrder="2">
```

```
<navLabel><text>PART ONE</text></navLabel>
<content src="Sway_body.html#part_1" />
<navPoint class="chapter" id="level2-book1chap01" playOrder="3">
<navLabel><text>THE HOUSES, 1969</text></navLabel>
<content src="Sway_body.html#chapter_1" />
</navPoint>
<navPoint class="chapter" id="level2-book1chap02" playOrder="4">
<navLabel><text>ROCK AND ROLL, 1962</text></navLabel>
<content src="Sway_body.html#chapter_2" />
</navPoint>
<navPoint class="chapter" id="level2-book1chap03" playOrder="5">
<navLabel><text>THE EMPRESS, 1928–1947</text></navLabel>
<content src="Sway_body.html#chapter_3" />
</navPoint>
</navPoint>
</navMap>
```

The NCX example above defines the following TOC hierarchy:

AUTHOR'S NOTE
PART ONE
    THE HOUSES, 1969
    ROCK AND ROLL, 1962
    THE EMPRESS, 1928–1947

This excerpt from the OPF (publication header file) shows how to add an NCX table of contents to a book.

Declare the NCX in the `<manifest>`:

```
<manifest>
<item id="toc" media-type="application/x-dtbncx+xml"
       href="toc.ncx"/>
```

And use it in the `<spine>`:

```
<spine toc="toc">
```

3.3.2 TOC Guideline #2: HTML TOC Must Be Linked

Place an HTML page with a table of contents at the beginning of the book, so that users can easily jump to locations within it (typically to a chapter). The entries in the TOC must be HTML links so that users can click to go to a specific location. A table of contents that is not made of links is not useful on Kindle.

3.3.3 TOC Guideline #3: HTML TOC Must Be Referenced

To enable the customer to jump to the TOC from the Kindle menu, the OPF file must reference the TOC from a TOC guide item or the navigation html file must reference a TOC in a `landmarks nav` element.

Every Kindle device or application has a user interface element that allows the user to jump to the TOC guide item or TOC item in a `landmarks nav` element from anywhere in the book.

Here is an example of a guide item for a TOC (underlined elements are mandatory):

```
<guide> <reference type="toc" title="Table of Contents" href="toc.html"/> </guide>
```

Here is an example of a `landmarks nav` element for a TOC (underlined elements are mandatory):

```
<nav epub:type="landmarks">

<ol><li><a epub:type="toc" href="toc.html">Table of Contents</a></li></ol>

</nav>
```

3.3.4 TOC Guideline #4: No Tables in TOC

Do not create a TOC using HTML `<table>` tags. When the TOC includes HTML `<table>` tags, the links of the TOC become not clickable/ non-functional. Tables are for tabular data only, not for layout.

3.3.5 TOC Guideline #5: No Page Numbers in TOC

Do not use page numbers in the TOC. Kindle books do not always map directly to page numbers in physical editions of the book.

If you are importing the document from Word, use the “Heading” styles and the "Table of Contents" feature of Microsoft Word. The TOC created by Word will be imported correctly and will convert to a TOC that follows these guidelines.

3.3.6 TOC Guideline #6: Place the TOC at the Front of the Book

Place the HTML TOC towards the beginning of the book and not at the end of the book. This ensures that a customer paging through the book from the beginning encounters the TOC naturally. Incorrect placement of the TOC affects the accuracy of the “Last Page Read” feature. Correct placement ensures that the TOC appears in sample downloads of the book.

3.3.7 TOC Guideline #7: Include a TOC for Bundled Editions

For bundled editions containing more than one individual book, include an overarching TOC at the beginning of the file.

3.4 landmarks nav Elements Guidelines

3.4.1 landmarks nav Elements Guideline #1: Recommended landmarks nav Elements

The Kindle platform supports `landmarks nav` elements for defining the cover, table of contents (TOC), and start reading location (”Go to Beginning”). Do not set the start reading location to a blank page.

Amazon does not recommend adding additional `landmarks nav` elements to the OPF file, because they will be grayed out in the menu options and may cause customer confusion.

IMPORTANT: The `landmarks nav` elements, especially the TOC `landmarks nav` element, do not replace the table of contents.

The `landmarks nav` elements are part of the IDPF 3.0 specification and are described at:

http://idpf.org/epub/30/spec/epub30-contentdocs-20111011.html#sec-xhtml-nav-def-model and

http://idpf.org/epub/30/spec/epub30-contentdocs-20111011.html#sec-xhtml-nav-def-types-landmarks.

3.5 Guide Item Guidelines

3.5.1 Guide Item Guideline #1: Recommended Guide Items

The Kindle platform supports guide items for defining the cover, the table of contents (TOC), and the start reading location (”Go to Beginning”). Do not set the start reading location to a blank page.

Amazon does not recommend adding additional guide items to the OPF file, because they will be grayed out in the menu options and may cause customer confusion.

IMPORTANT: Guide items, especially the TOC guide item, do not replace the table of contents.

3.6 Image Guidelines

These guidelines apply to most books, but are not applicable to the image-intensive fixed-layout children's books (see section 4) and fixed-layout graphic novels/manga/comics (see section 5). For cover image guidelines, see section 3.2.

3.6.1 Image Guideline #1: Use Supported Input Formats

The Kindle platform supports GIF, BMP, JPEG, non-transparent PNG, and Scalable Vector Graphics (SVG) images.

When using images for schemas, charts, tables, maps, or anything that includes text, pay special attention to the legibility of the final image.

Add images to the source using the standard HTML `<img>` tag.

Use a resolution of 300 dpi or 300 ppi for all images.

Use RGB as the color profile when saving your files. Kindle does not support CMYK or sRGB.

3.6.2 Image Guideline #2: KindleGen Performs Automatic Image Conversions

The maximum size of an individual image file is 5 MB. The maximum size of a mobi is 650 MB.

You will obtain the best results by optimizing your images to the highest quality possible within the file size limit before inputting your files into KindleGen. If the automatic image conversion is unsatisfactory, try optimizing the images before feeding them to KindleGen.

3.6.3 Image Guideline #3: Use Color Images

Use color images whenever possible and relevant. If an image is a photograph, it must be formatted as a JPEG.

3.6.4 Image Guideline #4: Photographs Should Use JPEG Format

Photographs should use the JPEG format with a quality factor of 40 or higher. Photographs should use the highest resolution available within the file size limit. KindleGen reprocesses the photographs as needed to adapt them to the requirements of the file format.

Photographs should not be too small. Make sure that input photos are at least 600 x 800 pixels in size, unless you optimize them according to section 3.6.2, Image Guideline #2: KindleGen Performs Automatic Image Conversions. Photographs of less than 300 x 400 pixels are much too small and can be rejected.

If the photographs are in GIF format or are too small, converting them to JPEG or artificially increasing the size does not improve the quality. Go back to the original source to create a JPEG image with sufficient resolution.

3.6.5 Image Guideline #5: Use GIF or PNG for Line-Art and Text

Line-art images are graphics drawn with a limited number of solid colors (such as images drawn by Illustrator, Paint, or Power Point, including black-and-white drawings). Text, graphics, charts, and tables are examples of images that are line-art.

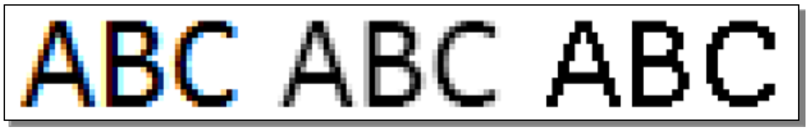
Line-art should be in GIF or PNG format. The JPEG algorithm tries to blend parts of the image together, and blurs the sharp edges of the line-art, causing the image (and any text it contains) to be blurry.

Text appearing in line-art images should be sharp and legible.

Optimize line-art GIFs before submitting them to KindleGen. Resizing or JPEG compression introduces blurriness or unwanted artifacts in line-art images, which is why Amazon insists on GIF or PNG file formats for line-art.

To optimize GIFs and PNGs and make them fit the image size limit, try the following tips:

- Try reducing the number of colors used. This can often be done without altering the quality of the image. Line-art images that appear to be black and white might actually be in color because of certain anti-aliasing algorithms. Here is an example (notice the shades of red and blue around the "A" in the left picture):



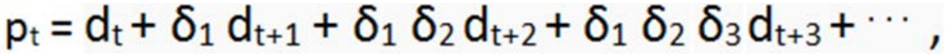
- Remove white margins around the image, if any exist. When cropping, consider how the image will look on devices set to white, sepia, and black backgrounds.
- Resize the image, if necessary, but pay close attention to the legibility of text (see section 3.6.6, Image Guideline #6: Image and Font Size Requirements for Line-Art and Text).

3.6.6 Image Guideline #6: Image and Font Size Requirements for Line-Art and Text

An image containing text should not be significantly larger than a Kindle screen. The Kindle e Ink devices offer the possibility to rotate an image to use more screen real estate. The Fire tablets and the Kindle for iPhone application allow zooming and panning. However, reading experience degrades rapidly for very large line-art images.

The following rules ensure a good rendering on all Kindle platforms for line-art images containing text:

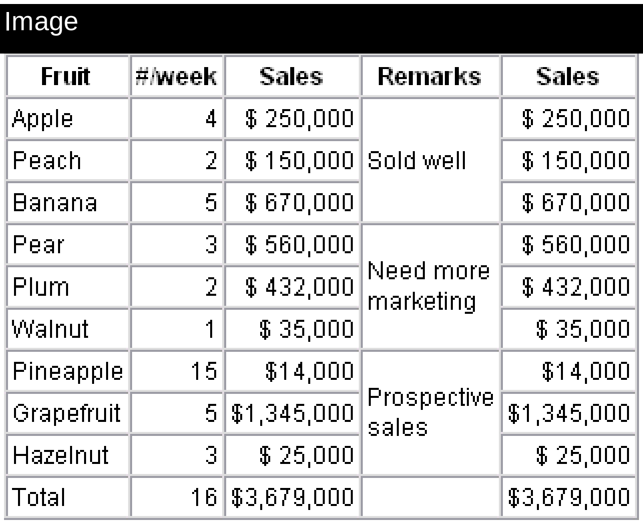
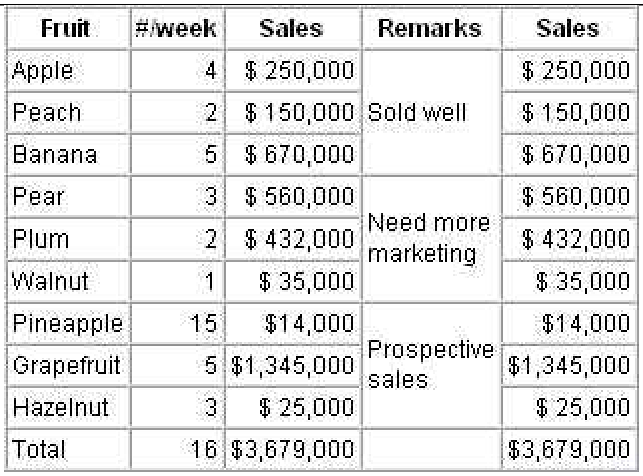
- The MAXIMUM image size is 500 x 600 pixels. This ensures that the image is not shrunk on a Kindle device, which could make the text illegible.
- The MINIMUM size of text is 6 pixels for the height of a lowercase "a."The image itself will need to be larger than 6 pixels in height if there is any extra space above or below the "a." For an image that contains only a single line of text, such as the example below, the image should be at least 45 pixels in height so that it displays proportional to surrounding text content.



$$p_t = d_t + \delta_1\, d_{t+1} + \delta_1\, \delta_2\, d_{t+2} + \delta_1\, \delta_2\, \delta_3\, d_{t+3} + \cdots ,$$

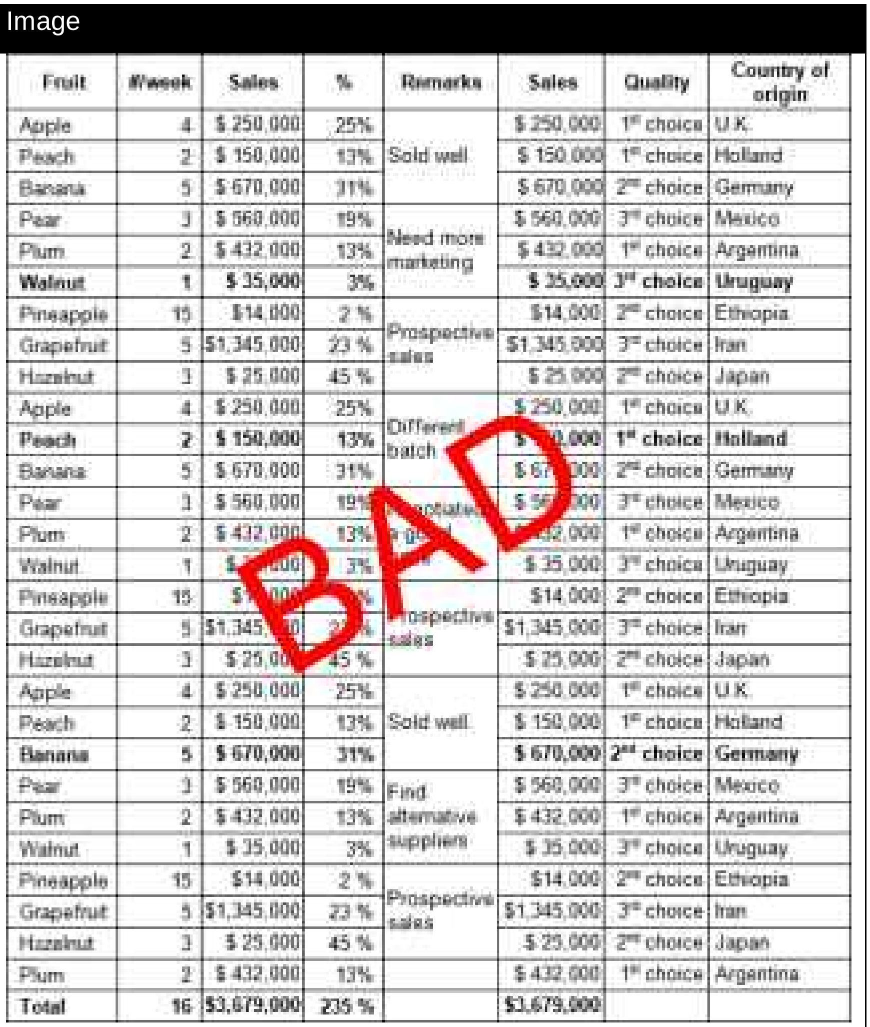
These rules limit the size of tables rendered as pictures. Larger tables should be reformatted.

Example Images

Description	Image
A table with line-art/text content rendered as an image. This GIF image is 317 x 233 pixels and 6 KB in size. The text is sharp and legible. The font size requirement is met ("a" is 7 pixels high).	
The same image with JPEG compression. Compression artifacts appear, making the text blurry although it remains legible. The size has increased to 17 KB.	

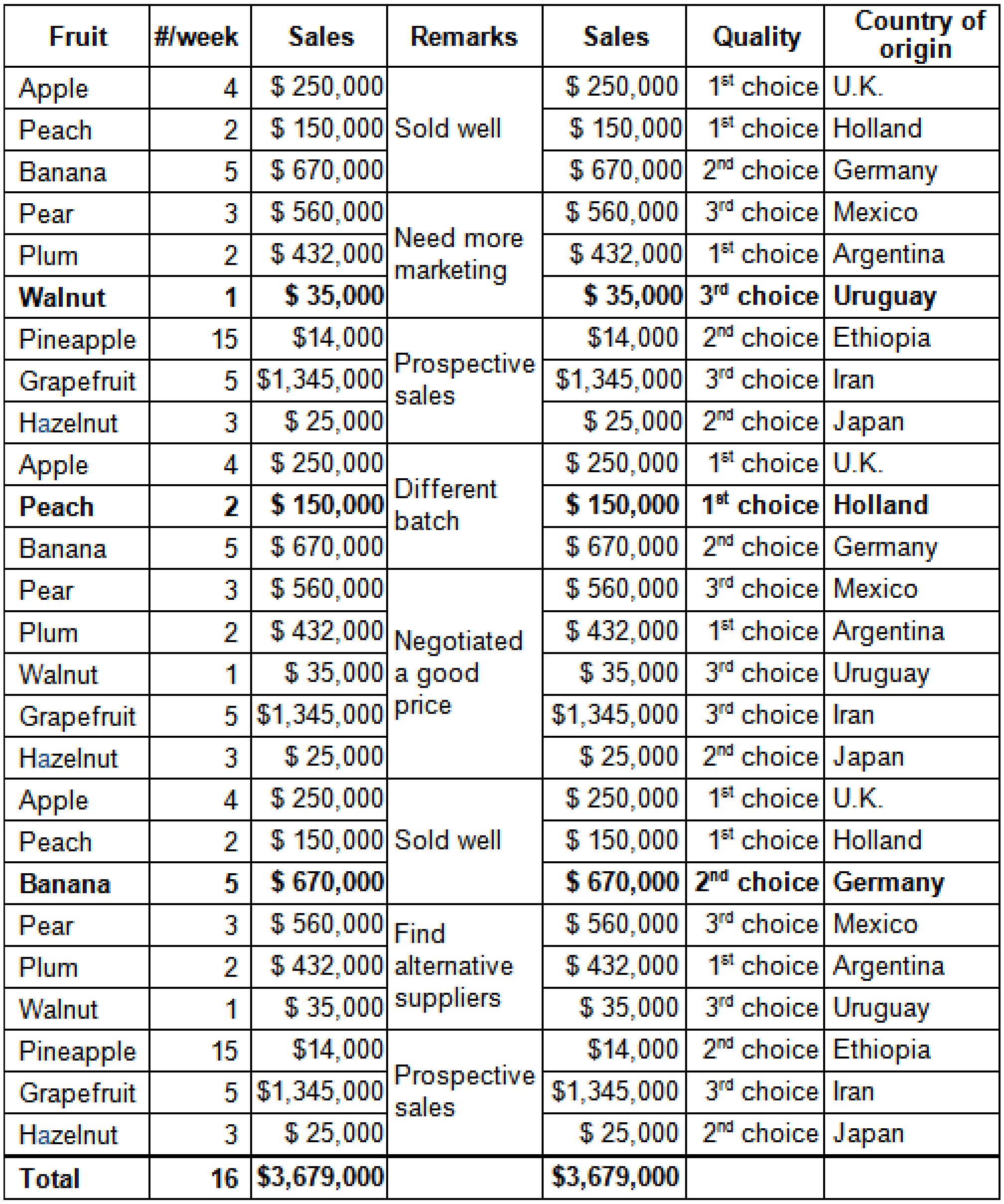
Fruit	#/week	Sales	Remarks	Sales
Apple	4	$ 250,000	Sold well	$ 250,000
Peach	2	$ 150,000		$ 150,000
Banana	5	$ 670,000		$ 670,000
Pear	3	$ 560,000	Need more marketing	$ 560,000
Plum	2	$ 432,000		$ 432,000
Walnut	1	$ 35,000		$ 35,000
Pineapple	15	$14,000	Prospective sales	$14,000
Grapefruit	5	$1,345,000		$1,345,000
Hazelnut	3	$ 25,000		$ 25,000
Total	16	$3,679,000		$3,679,000

Fruit	#/week	Sales	Remarks	Sales
Apple	4	$ 250,000	Sold well	$ 250,000
Peach	2	$ 150,000		$ 150,000
Banana	5	$ 670,000		$ 670,000
Pear	3	$ 560,000	Need more marketing	$ 560,000
Plum	2	$ 432,000		$ 432,000
Walnut	1	$ 35,000		$ 35,000
Pineapple	15	$14,000	Prospective sales	$14,000
Grapefruit	5	$1,345,000		$1,345,000
Hazelnut	3	$ 25,000		$ 25,000
Total	16	$3,679,000		$3,679,000

Description	Image
Bad quality: The image is blurry because of resizing and JPEG compression. The text is not legible. This will be rejected.	

Fruit	#/week	Sales	%	Remarks	Sales	Quality	Country of origin
Apple	4	$ 250,000	25%	Sold well	$ 250,000	1st choice	U.K.
Peach	2	$ 150,000	13%		$ 150,000	1st choice	Holland
Banana	5	$ 670,000	31%		$ 670,000	2nd choice	Germany
Pear	3	$ 560,000	19%	Need more marketing	$ 560,000	3rd choice	Mexico
Plum	2	$ 432,000	13%		$ 432,000	1st choice	Argentina
Walnut	**1**	**$ 35,000**	**3%**		**$ 35,000**	**3rd choice**	**Uruguay**
Pineapple	15	$14,000	2 %	Prospective sales	$14,000	2nd choice	Ethiopia
Grapefruit	5	$1,345,000	23 %		$1,345,000	3rd choice	Iran
Hazelnut	3	$ 25,000	45 %		$ 25,000	2nd choice	Japan
Apple	4	$ 250,000	25%	Different batch	$ 250,000	1st choice	U.K.
Peach	**2**	**$ 150,000**	**13%**		[illegible]	**1st choice**	**Holland**
Banana	5	$ 670,000	31%		[illegible]	2nd choice	Germany
Pear	3	$ 560,000	[illegible]	[illegible]	[illegible]	3rd choice	Mexico
Plum	2	$ 432,000	13%		[illegible]	1st choice	Argentina
Walnut	1	[illegible]	3%		$ 35,000	3rd choice	Uruguay
Pineapple	15	[illegible]	[illegible]	Prospective sales	$14,000	2nd choice	Ethiopia
Grapefruit	5	[illegible]	[illegible]		$1,345,000	3rd choice	Iran
Hazelnut	3	[illegible]	45 %		$ 25,000	2nd choice	Japan
Apple	4	$ 250,000	25%	Sold well	$ 250,000	1st choice	U.K.
Peach	2	$ 150,000	13%		$ 150,000	1st choice	Holland
Banana	**5**	**$ 670,000**	**31%**		**$ 670,000**	**2nd choice**	**Germany**
Pear	3	$ 560,000	19%	Find alternative suppliers	$ 560,000	3rd choice	Mexico
Plum	2	$ 432,000	13%		$ 432,000	1st choice	Argentina
Walnut	1	$ 35,000	3%		$ 35,000	3rd choice	Uruguay
Pineapple	15	$14,000	2 %	Prospective sales	$14,000	2nd choice	Ethiopia
Grapefruit	5	$1,345,000	23 %		$1,345,000	3rd choice	Iran
Hazelnut	3	$ 25,000	45 %		$ 25,000	2nd choice	Japan
Plum	2	$ 432,000	13%		$ 432,000	1st choice	Argentina
Total	**16**	**$3,679,000**	**235 %**		**$3,679,000**		

An example of the largest acceptable table rendered as an image is given below. The size is 500 x 600 pixels, which is the maximum. The font uses a body size (height of an “a”) of 7 pixels, which is just above the 6 pixel minimum. The size of the GIF is 33 KB.



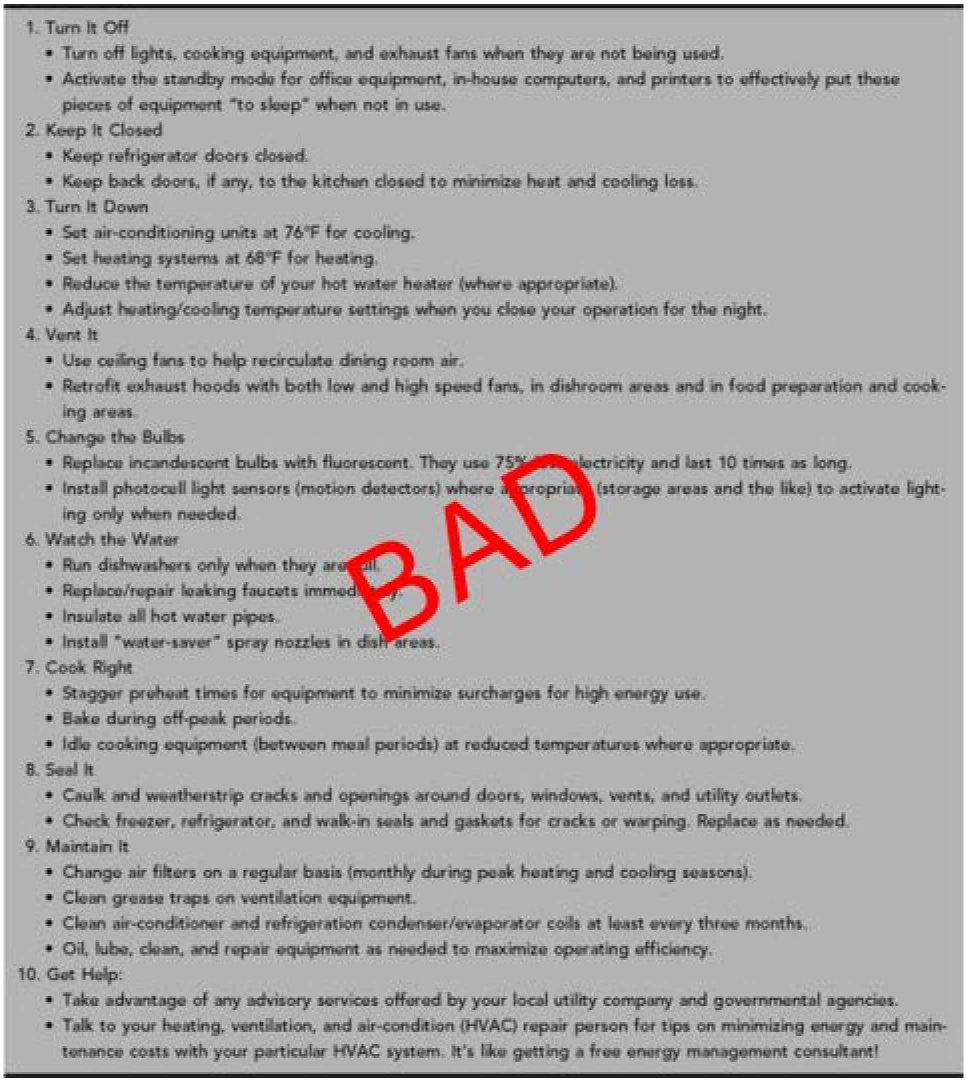
Fruit	#/week	Sales	Remarks	Sales	Quality	Country of origin
Apple	4	$ 250,000	Sold well	$ 250,000	1st choice	U.K.
Peach	2	$ 150,000		$ 150,000	1st choice	Holland
Banana	5	$ 670,000		$ 670,000	2nd choice	Germany
Pear	3	$ 560,000	Need more marketing	$ 560,000	3rd choice	Mexico
Plum	2	$ 432,000		$ 432,000	1st choice	Argentina
Walnut	**1**	**$ 35,000**		**$ 35,000**	**3rd choice**	**Uruguay**
Pineapple	15	$14,000	Prospective sales	$14,000	2nd choice	Ethiopia
Grapefruit	5	$1,345,000		$1,345,000	3rd choice	Iran
Hazelnut	3	$ 25,000		$ 25,000	2nd choice	Japan
Apple	4	$ 250,000	Different batch	$ 250,000	1st choice	U.K.
Peach	**2**	**$ 150,000**		**$ 150,000**	**1st choice**	**Holland**
Banana	5	$ 670,000		$ 670,000	2nd choice	Germany
Pear	3	$ 560,000	Negotiated a good price	$ 560,000	3rd choice	Mexico
Plum	2	$ 432,000		$ 432,000	1st choice	Argentina
Walnut	1	$ 35,000		$ 35,000	3rd choice	Uruguay
Grapefruit	5	$1,345,000		$1,345,000	3rd choice	Iran
Hazelnut	3	$ 25,000		$ 25,000	2nd choice	Japan
Apple	4	$ 250,000	Sold well	$ 250,000	1st choice	U.K.
Peach	2	$ 150,000		$ 150,000	1st choice	Holland
Banana	**5**	**$ 670,000**		**$ 670,000**	**2nd choice**	**Germany**
Pear	3	$ 560,000	Find alternative suppliers	$ 560,000	3rd choice	Mexico
Plum	2	$ 432,000		$ 432,000	1st choice	Argentina
Walnut	1	$ 35,000		$ 35,000	3rd choice	Uruguay
Pineapple	15	$14,000	Prospective sales	$14,000	2nd choice	Ethiopia
Grapefruit	5	$1,345,000		$1,345,000	3rd choice	Iran
Hazelnut	3	$ 25,000		$ 25,000	2nd choice	Japan
Total	**16**	**$3,679,000**		**$3,679,000**		

3.6.7 Image Guideline #7: Prefer HTML to Images

Do not render large chunks of text as images. If an image contains whole paragraphs of text, it should not be an image. Instead, it should be HTML.

The following is an example of a text-heavy image that should be HTML.

Note: The image would be shrunk to fit the screen and become unreadable, while an HTML version would be paginated.



1. Turn It Off
   - Turn off lights, cooking equipment, and exhaust fans when they are not being used.
   - Activate the standby mode for office equipment, in-house computers, and printers to effectively put these pieces of equipment "to sleep" when not in use.
2. Keep It Closed
   - Keep refrigerator doors closed.
   - Keep back doors, if any, to the kitchen closed to minimize heat and cooling loss.
3. Turn It Down
   - Set air-conditioning units at 76°F for cooling.
   - Set heating systems at 68°F for heating.
   - Reduce the temperature of your hot water heater (where appropriate).
   - Adjust heating/cooling temperature settings when you close your operation for the night.
4. Vent It
   - Use ceiling fans to help recirculate dining room air.
   - Retrofit exhaust hoods with both low and high speed fans, in dishroom areas and in food preparation and cooking areas.
5. Change the Bulbs
   - Replace incandescent bulbs with fluorescent. They use 75% less electricity and last 10 times as long.
   - Install photocell light sensors (motion detectors) where appropriate (storage areas and the like) to activate lighting only when needed.
6. Watch the Water
   - Run dishwashers only when they are full.
   - Replace/repair leaking faucets immediately.
   - Insulate all hot water pipes.
   - Install "water-saver" spray nozzles in dish areas.
7. Cook Right
   - Stagger preheat times for equipment to minimize surcharges for high energy use.
   - Bake during off-peak periods.
   - Idle cooking equipment (between meal periods) at reduced temperatures where appropriate.
8. Seal It
   - Caulk and weatherstrip cracks and openings around doors, windows, vents, and utility outlets.
   - Check freezer, refrigerator, and walk-in seals and gaskets for cracks or warping. Replace as needed.
9. Maintain It
   - Change air filters on a regular basis (monthly during peak heating and cooling seasons).
   - Clean grease traps on ventilation equipment.
   - Clean air-conditioner and refrigeration condenser/evaporator coils at least every three months.
   - Oil, lube, clean, and repair equipment as needed to maximize operating efficiency.
10. Get Help:
    - Take advantage of any advisory services offered by your local utility company and governmental agencies.
    - Talk to your heating, ventilation, and air-condition (HVAC) repair person for tips on minimizing energy and maintenance costs with your particular HVAC system. It's like getting a free energy management consultant!

3.6.8 Image Guideline #8: Image Caption Placement

Amazon recommends placing a caption below the related image, so that the reader views the image before the caption. Define a line break between the image and the caption (for example, using a `<br />` tag) to make sure the caption text is not positioned adjacent to the image.

3.6.9 Image Guideline #9: Controlling Image Aspect Ratio

To preserve aspect ratio of images, width and height cannot both be set to a fixed percentage. Either width or height can be set to the fixed percentage (such as 100%), but then the other property should be set to “auto” to preserve the aspect ratio.

3.6.10 Image Guideline #10: Displaying Text Correctly within SVG

To display text correctly within an SVG, use the font-size attribute for <text> inside the SVG.

Example

```
<html>

<body>

<svg xmlns="http://www.w3.org/2000/svg" version="1.1">
```

```
  <text x="20" y="20" font-size=20 fill="red">svg text sample</text>
</svg>
</body>
</html>
```

3.6.11 Image Guideline #11: Use Supported SVG Tags and Elements

A publisher can reference the SVG files from within an HTML file using inline `<svg>`, `<img>, <embed>,` or `<object>` tags. Please refer to the SVG specification http://www.w3.org/TR/SVG/ for details about SVG.

Example

```
<html>
<body>
<svg xmlns="http://www.w3.org/2000/svg"><!–Inline SVG--></svg>
<img src="svgfile1.svg"/>
<embed src="svgfile2.svg"/>
<object src="svgfile3.svg"/>
</body>
</html>
```

Supported SVG Elements

```
<circle>
<clipPath>
<defs>
<ellipse>
<feBlend>
<feColorMatrix>
<feComponentTransfer>
<feComposite>
<feConvolveMatrix>
<feDiffuseLighting>
<feDisplacementMap>
<feDistantLight>
<feFlood>
<feFuncA>
<feFuncB>
<feFuncG>
<feFuncR>
<feGaussianBlur>
<feMerge>
```

`<feMergeNode>`

`<feMorphology>`

`<feOffset>`

`<fePointLight>`

`<feSpecularLighting>`

`<feSpotLight>`

`<feTile>`

`<feTurbulence>`

`<Filter>`

`<font-face>`

`<font-face-name>`

`<font-face-src>`

`<line>`

`<linearGradient>`

`<marker>`

`<mask>`

`<metadata>`

`<path>`

`<pattern>`

`<polygon>`

`<polyline>`

`<radialGradient>`

`<rect>`

`<stop>`

`<style>`

`<svg>`

`<symbol>`

`<text>`

`<textPath>`

`<tref>`

`<tspan>`

`<use>`

Reference: http://www.webkit.org/projects/svg/status.xml.

3.7 Table Guidelines

3.7.1 Table Guideline #1: Use Tables for Tabular Data Only

IMPORTANT: Use tables for tabular data only. Using tables for layout is not allowed in Kindle books. Do not use tables for dialogue, transcripts, chronologies, tables of contents, lists, sidebars, or any other formatting purposes.

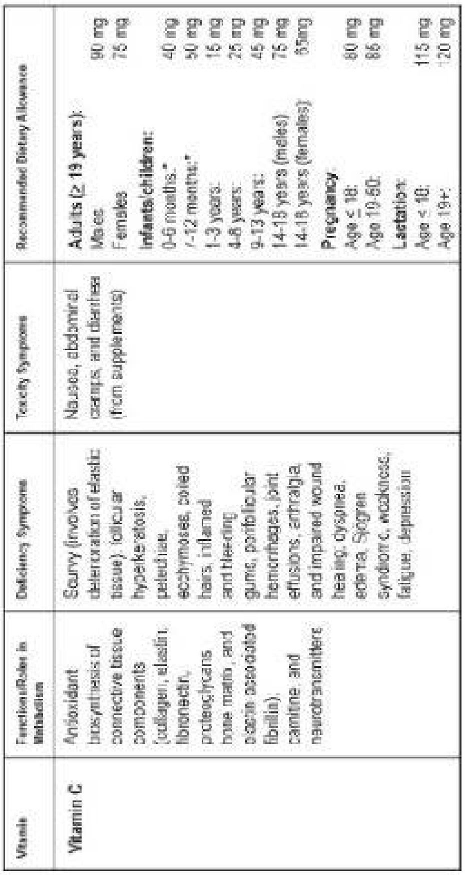
3.7.2 Table Guideline #2: Avoid Large Tables

A table rendered as an image cannot be paginated because the entire image is displayed on one screen. If the table is rendered using HTML `<table>` tags, pagination is available and users can cursor through the cells in the table. If the table is significantly wider than the screen and forces panning, it creates a poor user experience.

For the best user experience, tables should not contain whole paragraphs of text or large pictures in a cell.

If a table is too large or contains too much text in its cells, consider reformatting it in a way that maintains legible text. Single columns of HTML text provide the best reading experience for customers using a variety of font sizes.

In the example below, rotating the table to better fit the screen does not help. To preserve the format and layout of the data, it would be better to have the paragraph text as plain HTML and only the right-most column rendered as an image or HTML table.

Large table rendered as an image: illegible text, unacceptable quality	The same content, reformatted as HTML and resulting in a legible, good-quality table
	Vitamin C Functions/Roles in Metabolism Antioxidant; biosynthesis of connective tissue components (collagen, elastin, fibronectin, proteoglycans, bone matrix, and elastin–associated fibrillin); carnitine, and neurotransmitters Deficiency Symptoms Scurvy (involves deterioration of elastic tissue); follicular hyperkeratosis, petechiae, ecchymoses, coiled hairs, inflamed and bleeding gums, perifollicular hemorrhages, joint effusions, arthralgia, and impaired wound healing; dyspnea, edema, Sjögren syndrome, weakness, fatigue, depression Toxicity Symptoms Nausea, abdominal cramps, and diarrhea (from supplements)

Vitamin	Functions/Roles in Metabolism	Deficiency Symptoms	Toxicity Symptoms	Recommended Dietary Allowance	
Vitamin C	Antioxidant biosynthesis of connective tissue components (collagen, elastin, fibronectin, proteoglycans bone matrix, and elastin associated fibrillin); carnitine, and neurotransmitters	Scurvy (involves deterioration of elastic tissue); follicular hyperkeratosis, petechiae, ecchymoses, coiled hairs, inflamed and bleeding gums, perifollicular hemorrhages, joint effusions, arthralgia, and impaired wound healing, dyspnea, edema, Sjögren syndrome, weakness, fatigue, depression	Nausea, abdominal cramps, and diarrhea (from supplements)	**Adults (≥ 19 years):** Males Females **Infants/children:** 0-6 months:* 7-12 months:* 1-3 years: 4-8 years: 9-13 years: 14-18 years (males) 14-18 years (females) **Pregnancy** Age ≤ 18: Age 19-50: **Lactation:** Age ≤ 18: Age 19+:	 90 mg 75 mg 40 mg 50 mg 15 mg 25 mg 45 mg 75 mg 65mg 80 mg 85 mg 115 mg 120 mg

3.7.3 Table Guideline #3: Create Simple HTML Tables

Use the `<table>` tags to create simple tables with standard rows and columns that can be displayed on Kindle devices and applications. KF8 has support for nested tables and merged cells, but Amazon recommends that publishers use this judiciously and only when necessary.

`Colspan` and `rowspan` attributes should be less than or equal to the total number of columns or rows (as appropriate) in the table.

3.7.4 Table Guideline #4: Split Tables as Needed

There are times when it may be necessary to format a table as an image, but the image is still too large to be legible on one Kindle screen. In this case, it is a good idea to split the image. The following example is a guideline to use when splitting a 2-page table. This logic can be extended for multiple-page table images.

Example: Split the image in half horizontally 60% of the way down the image, then split the header, copy it to the bottom half of the image, and stitch these into a new image. The final two images should then be the same size, with table headers.

Revise the source image, not the converted GIF; otherwise, the image will be converted into GIF format twice, which might result in lower quality.

3.7.5 Table Guideline #5: Optimize for Maximum Table Size

Optimize tables to be no larger than 10 Kindle screens. A Kindle screen is approximately 24 rows of 60 characters, although the Kindle DX shows more characters. The character limit is the maximum number of characters in any one row. There are a limited number of combinations for a table that looks like this (see below). If a table has more characters than the maximum number specified below (given the number of rows), split the table into smaller tables or images, as described in section 3.7.4, Table Guideline #4: Split Tables as Needed. In this case, characters are non-formatting characters (the actual text that a user sees when looking at the contents of a table).

Number of Rows	Maximum Characters (Per Row)
1 - 24	600
25 - 48	300
49 – 72	180
72 – 120	120
121 – 240	60

3.8 Styling Guidelines

3.8.1 Styling Guideline #1: Use a Nested HTML TOC

To create useful, navigable, deep TOC entries, Amazon recommends using the following syntax in the HTML TOC. The examples below show two ways of writing the same sample code: style attributes and CSS classes.

Using style attributes:

```
<div>Section 1</div>
<div style="margin-left:1em;">Chapter 1</div>
<div style="margin-left:1em;">Chapter 2</div>
<div style="margin-left:1em;">Chapter 3</div>
<div style="margin-left:2em;">Subchapter 1</div>
```

```
<div style="margin-left:2em;">Subchapter 2</div>
<div style="margin-left:1em;">Chapter 4</div>
<div style="margin-left:2em;">Subchapter 1</div>
<div>Section 2</div>
```

Using CSS classes:

```
<style>
div.chapter { margin-left: 1em}
div.subchapter { margin-left: 2em}
</style>
<div>Section 1</div>
<div class="chapter">Chapter 1</div>
<div class="chapter">Chapter 2</div>
<div class="chapter">Chapter 3</div>
<div class="subchapter">Subchapter 1</div>
<div class="subchapter">Subchapter 2</div>
<div class="chapter">Chapter 4</div>
<div class="subchapter">Subchapter 1</div>
<div>Section 2</div>
```

3.8.2 Styling Guideline #2: Format Sidebars Correctly

When inserting sidebar content into the main flow of a book formatted for Kindle Format 8, use float via CSS. However, if the book is formatted for Mobi 7, use the `<hr/>` HTML tags before and after the sidebar to differentiate it from the main body of text. Avoid using negative em values when specifying dimensions for a float element.

3.8.3 Styling Guideline #3: Design for a Good eBook Experience

Kindle supports float via CSS, but this does not guarantee that the floating of text and images will produce an exact replica of the print layout on all Kindle devices and applications. If float is not producing the desired result, Amazon recommends designing for a good eBook experience rather than fixating on duplicating the print experience on a device. Using fixed-layout format just to replicate print layout is not allowed in Kindle books because customers report this as a bad user experience.

3.9 HTML Guidelines

3.9.1 HTML Guideline #1: Constructing Well-Formed HTML Documents (XHTML)

Kindle Format 8 supports most HTML 5.0 features, although the following HTML features are not fully supported: forms, frames, and JavaScript.

When creating source HTML or XHTML for the Kindle, refer to one of the following books as a primer on constructing well-formed HTML documents:

HTML, XHTML, and CSS by Elizabeth Castro (published by Peachpit Press): http://www.amazon.com/HTML-XHTML-and-CSS/dp/B000SEFC5Q

Beginning HTML with CSS and XHTML: Modern Guide and Reference by David Schultz and Craig Cook (published by Apress): http://www.amazon.com/Beginning-HTML-CSS-XHTML-Reference/dp/B001D25ZPE

Beginning Web Programming with HTML, XHTML, and CSS by John Duckett (published by Wrox): http://www.amazon.com/Beginning-Programming-HTML-XHTML-ebook/dp/B000VZQVVG

3.9.2 HTML Guideline #2: Anchors Must Be Added Before Formatting Tags

Correct: `<a name="Chapter1"/><h1>Chapter 1</h1>`
Incorrect: `<h1><a name="Chapter1"/>Chapter 1</h1>`

3.9.3 HTML Guideline #3: EPUB Guide Items Are Optional

Guide items are an optional feature in the EPUB format but are highly recommended. Kindle provides support for the cover, TOC, and text guide items. If you choose not to include guide items for the cover and TOC, these list items will still appear in the Kindle menus, but will be grayed out and not selectable.

3.9.4 HTML Guideline #4: Using Single Column Layout and Avoiding Absolute Positions

Create the content using single column layout and avoid using `position:absolute` for alignments.

3.9.5 HTML Guideline #5: Using position:absolute for Text on Image

For text on an image that needs to be positioned exactly, use the `position:absolute` attribute. Only use this attribute for books that need a fixed layout, such as children's picture books with text specifically positioned in relation to background image elements.

3.9.6 HTML Guideline #6: Avoid Using Negative Values

Avoid using negative values for positioning text and margins. Positioning with negative values without adding padding for compensation can cause content to display with the edge cut off. For example, if you want to use text-indent: -2em you also need to apply padding-left: 2em.

3.9.7 HTML Guideline #7: Avoid Using Scripting

Scripting is not supported. All scripts are stripped from the source during conversion. SVG with animation is not supported.

3.9.8 HTML Guideline #8: Avoid Using Negative Values for Line Height

Do not use negative values for the line-height attribute. They are not supported.

3.9.9 HTML Guideline #9: File References Must Match Case and Spelling of Source

Per WC3 HTML standards, all file references (fonts, images, etc.) must match the case and spelling of the name of the source file exactly.

3.10 Embedded Font Guidelines

Kindle Format 8 supports embedded fonts within the eBook. These fonts can be either Open Type (OTF) or True Type (TTF). Kindle does not recommend the use of Type 1 (Postscript) fonts. To provide Kindle customers with the best possible reading experience, reflowable books that use Type 1 fonts are rendered using Kindle fonts by default. On KF8-enabled devices and apps, customers have the option to turn publisher-provided fonts on or off.

The font files within the book are intentionally obfuscated to reduce the probability of reuse, but it is the responsibility of the publisher to secure the appropriate license rights for fonts. Unless embedded fonts are necessary to convey intent, Amazon recommends using the default set of fonts installed on Kindle devices and apps because they have been tuned for high quality rendering.

Only embed fonts that are not currently available on devices and apps. Publishers do not need to include the Charis font with their Kindle books because it is an Open Font Licensed typeface. When selecting a font, consider usability for visually impaired readers and select a simple, clear font which will contrast well against all tablet and e Ink backgrounds.

3.11 External Link Guidelines

External links within Kindle books should be present only if they directly enhance the reader experience and the content of the title as determined by Amazon. Some examples of this include:

- Links to multimedia content directly related the content of title;
- Links to additional ancillary material (e.g., checklists, assessment forms, craft patterns, and similar printable materials);

- Links to topical websites (e.g., link to Whitehouse.gov in a Kindle book about the American government);
- Social media related to the book or author (e.g., Twitter hashtag).

Some examples of prohibited links include:

- Links to pornography;
- Links to commercial eBook store sites other than Amazon;
- Links to web forms that request customer information (e.g., email address, physical address or similar);
- Links to illegal, harmful, infringing, or offensive content;
- Links that are malicious in intent (e.g., virus, phishing, or similar).

Amazon reserves the right to remove links in its sole discretion.

4 Creating Fixed-Layout Children's Books

Certain books have elements with fixed dimensions and orientation that do not allow fonts to be resized or text to be reflowed. For example, children's books and graphic novels have full-page images with text set precisely in relation to the background art. To accommodate these media types, KF8 introduces new metadata fields and corresponding guidelines.

Fixed-layout books do not support reflowable text and should only be used when the entire book is a fixed-layout format; books cannot be partially reflowable or partially fixed-layout.

To demonstrate best practices in creating fixed-layout books, Amazon provides a children's book example at www.amazon.com/kindleformat (under the **KindleGen Examples** heading). This example is a demonstration of how to create content to take advantage of fixed-layout with Region Magnification. It is not intended to be an HTML tutorial.

4.1 Metadata Fields Supporting Fixed-Layout Books

The OPF file specifies metadata necessary for fixed-layout books. For a demonstration, see the children's book example at www.amazon.com/kindleformat (under the **KindleGen Examples** heading).

Metadata	Description

`Layout can be specified using one of the following metadata fields:`
`1) <meta property="rendition:layout">pre-paginated</meta>`
`2) <meta name="fixed-layout" content="true"/>`
	Required. Identifies the book as having a fixed layout.
	Valid values for `rendition:layout` metadata are `reflowable` or `pre-paginated`. The default value is `reflowable`.
	Valid values for `fixed-layout` metadata are `true` or `false`. The default value is `false`.

`<meta name="original-resolution" content="1024x600"/>`	Required. Identifies the original design resolution of the content ("1024x600" is only an example). The pixel dimensions can have any positive integer value. These values must equal the overall aspect ratio of the original content.

Metadata	Description

`Orientation can be specified using one of the following metadata fields:`
`1) <meta property="rendition:orientation">landscape</meta>`
`2) <meta name="orientation-lock" content="landscape"/>`
	Optional.
	Valid values for `rendition:layout` metadata are `portrait`, `landscape`, or `auto`. Locks the orientation of the book to either portrait or landscape. If the value is `auto`, both portrait and landscape modes are supported. The default value is `auto`.
	Valid values for `orientation-lock` metadata are `portrait`, `landscape` or `none`. Locks the orientation of the content to either portrait or landscape. If the value is `none`, both portrait and landscape modes are supported. The default value is `none`.

`<meta name="RegionMagnification" content="true"/>`	An optional tag for enabling the Kindle Panel View and Kindle Text Pop-Up features that are required for comics and children's books. Valid values are `true` or `false`. The default value is `false`. Enabling this feature requires additional CSS instructions as specified in section 4.2.2.
`<meta name="primary-writing-mode" content="horizontal-rl"/>`	Optional. Defines page rendering order, reading mode, and reader navigation (including Kindle Text Pop-Up, Kindle Panel View, and Kindle Virtual Panels). Valid values are `horizontal-lr`, `horizontal-rl`, `vertical-lr`, and `vertical-rl`. The default value is `horizontal-lr`.
`<meta name="book-type" content="children"/>`	Optional for children’s books. Removes reader functionality (e.g., share) which may not be relevant for certain books such as children’s. Valid values are `children` or `comic`.

4.2 Content Requirements

4.2.1 Requirement #1: Using HTML File Structure

Fixed-layout content must have a single HTML file for each page represented on a Kindle device. Publishers may use the OPF metadata to create double-page spread reading experiences.

Portrait orientation lock:

1 print page = 1 HTML file

Example:

Landscape orientation lock:

2 print pages (1 two-page spread) = 1 HTML file

Example:

4.2.2 Requirement #2: Using Region Magnification (Pop-ups)

Fixed-layout content does not allow the user to change the font size; allowing font sizes to change could obfuscate content relevant to storytelling. Kindle uses Region Magnification (pop-ups) to enlarge fixed-layout text without altering the original layout. For an example of Region Magnification, see the example below.

The user activates Region Magnification by double tapping an "active area" on touch screen devices. (On non-touch screen devices, clicking the up arrow on the 5-way controller selects the region and clicking the center button activates Kindle Text Pop-Up or Kindle Panel View.) During Region Magnification, the active area (source element) is hidden and the magnification area (target element) is displayed.

To support Region Magnification, the following steps are required:

1. Set the active area by creating a well-defined HTML anchor (`<a>`)element around the text to be enlarged. The anchor must specify the `app-amzn-magnify` class. The anchor should also have the following attributes stored in a JSON object (http://www.w3schools.com/json/json_syntax.asp) as part of the `data-app-amzn-magnify` value:

   a. `"targetId":"<string:elementId>"` = unique element id of the magnification area (position and font size are set in CSS file)

   b. `"sourceId":"<string:elementId>"` = unique element id of the source that will be magnified

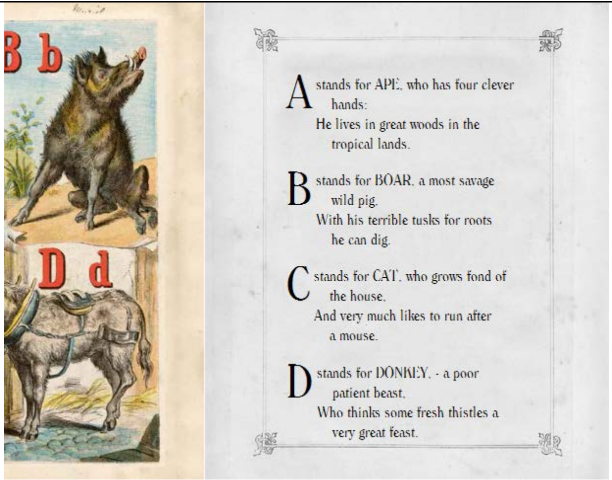
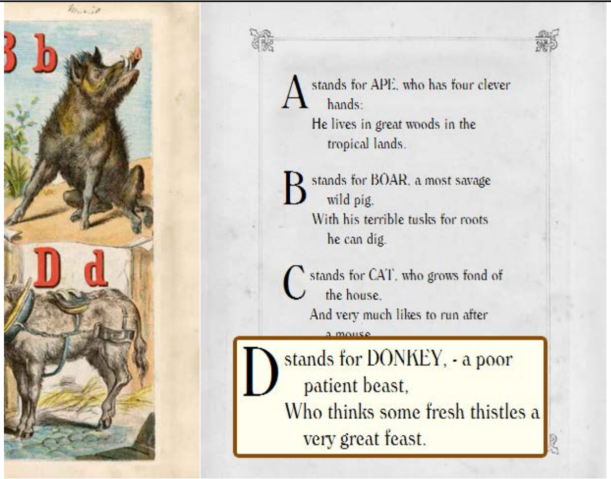
   c. `"ordinal":<integer:reading order>"` = reading order of the magnification areas (the order in which panels appear as part of the reading flow). This is required for all text that uses Region Magnification.

2. Create a target `<div>` element that is aligned to completely cover the text being magnified and positioned to minimize covering the background art of the page. This ensures that when a user activates Region Magnification, the source text will not disappear from the page view. When magnification is activated, the source text is no longer displayed. It is also important to not position a popup directly abutting the right or bottom edges of the screen. Differences between device types can create content overflow error if popups are too close to these edges. Check content on as many different kinds of devices as possible before publishing.

3. The font size of text in the Region Magnification `<div>` should be set to 150% of the regular font size on the page. There are several exceptions to this:

   - One exception is when the text on the page is so large that magnifying it to 150% would make it harder to read instead of improving readability.

   - Another exception is when the text on the page needs to be increased by more than 150% to improve readability in the Region Magnification `<div>`. For example, if the font size of the text on the page is 45%, the font size of the text in the Region Magnification `<div>` may need to be magnified to 225% to be readable.

 B b D d A stands for APE, who has four clever hands: He lives in great woods in the tropical lands. B stands for BOAR, a most savage wild pig, With his terrible tusks for roots he can dig. C stands for CAT, who grows fond of the house, And very much likes to run after a mouse. D stands for DONKEY, - a poor patient beast, Who thinks some fresh thistles a very great feast.	 B b D d A stands for APE, who has four clever hands: He lives in great woods in the tropical lands. B stands for BOAR, a most savage wild pig, With his terrible tusks for roots he can dig. C stands for CAT, who grows fond of the house, And very much likes to run after a mouse. D stands for DONKEY, - a poor patient beast, Who thinks some fresh thistles a very great feast.
Fixed-layout sample page	Same sample page with Region Magnification activated

Example:

```
<div id="fs1-4-org" class="txt fs1-txt4">

    <a class="app-amzn-magnify"

    data-app-amzn-magnify='{"targetId":"fs1-txt4-magTarget", "sourceId":"fs1-4-txt",
"ordinal":4}'>

    <p id="fs1-4-txt"><span class="dropcap">D</span>stands for DONKEY, - a poor
patient beast<br/>Who thinks some fresh thistles a very great feast.</p></a></div>

…
```

```
<div id="fs1-txt4-magTarget" class="target-mag fs1-txt4"></div>
```

4.2.3 Requirement #3: Setting Images as Background Images

The images in fixed-layout books must be set as background images using the CSS `background-image` property (instead of using HTML `<img>` tags). This is important for children's content and comic books because HTML images interfere with Region Magnification if they are not set as background images. If background images are correctly set, the images will not open in the image viewer when double tapped.

4.3 Content Recommendations

4.3.1 Recommendation #1: Applying CSS Reset

Apply a CSS reset to fixed-layout books. A CSS reset removes the inconsistent styles that browsers automatically apply, such as font sizes, margins, etc. Adding a CSS reset, such as the YUI reset (http://yuilibrary.com/yui/docs/cssreset), removes these inconsistencies, allowing designers to build on a dependable styling template.

4.3.2 Recommendation #2: Including One CSS File Per HTML Page

To increase page-turn performance on fixed-layout books, include one short, relevant CSS file per HTML page. CSS files should only contain information that is directly referenced by the associated HTML files.

4.3.3 Recommendation #3: Optimizing Content for Full Screen

Kindle books are read across a wide variety of devices (e.g., Kindle e Ink, Fire tablets, and other manufacturers' smartphones and tablets) and a wide variety of screen dimensions. The 2013 Kindle Fire HD 8.9" has a resolution of 1920 x 1200 pixels. Design the content to maintain this aspect ratio, if possible.

For the best user experience, Amazon strongly encourages publishers to design fixed-layout content to maximize the available space of the screen dimensions. If the content has a different aspect ratio or size, the Kindle devices and apps display it scaled to fit the screen, centered, and surrounded by a white margin (letterbox).

Fixed-layout and other image-heavy content is more likely to be magnified because customers prefer to read with Kindle Panel View or on devices with large screens. Amazon recommends submitting images scaled to support at least 2X magnification with high quality. For example, if planning for the 2013 Kindle Fire HD 8.9", the image pixel dimensions should be at least 3840 x 2400 (this matches the aspect ratio and would support 2X zoom). Always use Kindle Previewer to validate the quality of the content.

4.3.4 Recommendation #4: Using Large Region Magnification Tap Targets in Children's Books

The primary purpose of Region Magnification is to aid accessibility and is more effective when the tap target is larger than the area being magnified. To enable a larger area, consider adding a padding of 20 to 40 pixels to the `app-amzn-magnify` anchor elements, but do not let the tap targets overlap.

4.3.5 Recommendation #5: Future-Proofing Fixed-Layout Content in Children's Books

By definition, fixed-layout is designed for a single screen size. To future-proof your content, Amazon recommends using percentage or em values instead of pixels or points for all positioning of text blocks and Region Magnification pop-ups. Specifying text position or font size with pixels prevents the content from scaling to new devices.

For example, the children's book example at www.amazon.com/kindleformat (under the **KindleGen Examples** heading) includes a sample style sheet (style-150.css) that demonstrates the minimal set of changes required to scale to a device that is 150% larger. These changes are limited to a base font-size and changes in the container height and widths (approximately 5 updates).

4.3.6 Recommendation #6: Including Specific Fonts

Fixed-format titles do not allow users to choose and vary fonts. Using CSS `@font-face` and packaging fonts with the title guarantees book design look-and-feel to be consistent across all devices and screens. This not only ensures that the exact fonts used for the source are used in the fixed-format title, but that HTML text has more fluid rendering between the page view and the Region Magnification view.

Example:

```
@font-face {

      font-family: "Arial"; /* assigns the name of the font to use */

      src: url(../fonts/arial.otf); /* includes the file for the correct font
*/

}
```

4.3.7 Recommendation #7: Do Not Include an HTML Front Cover

While Amazon previously recommended an HTML front cover page for fixed-format books, this is no longer necessary.

Kindle books should only have one visible JPEG cover. This cover should be a high-resolution JPEG image that has the same level of quality as the subsequent pages. Any instances of HTML cover pages should be deleted to avoid a repetition of the cover image.

The cover image should appear in the device carousel. If it does not, see section 3.2.2, Cover Image Guideline #2: Internal Content Cover Image Is Mandatory, for instructions on defining the cover in the OPF file.

4.3.8 Recommendation #8: Including Back Cover

While Kindle ebooks in previous formats and reflowable text do not use back covers, it provides a sense of closure to the narrative for children’s content. It is best to include a back cover as part of the fixed-format children’s book design. Remove barcodes, price listings, and promotional content from the back cover image. Do not include popups for any text on the back cover unless the back cover includes story text.

4.3.9 Recommendation #9: Do Not Include Start Reading Location

In Kindle fixed-format books, the OPF file should not include the start reading location (”Go to Beginning”) guide item. Amazon now sets this guide item to the JPEG cover for Kindle fixed-format books.

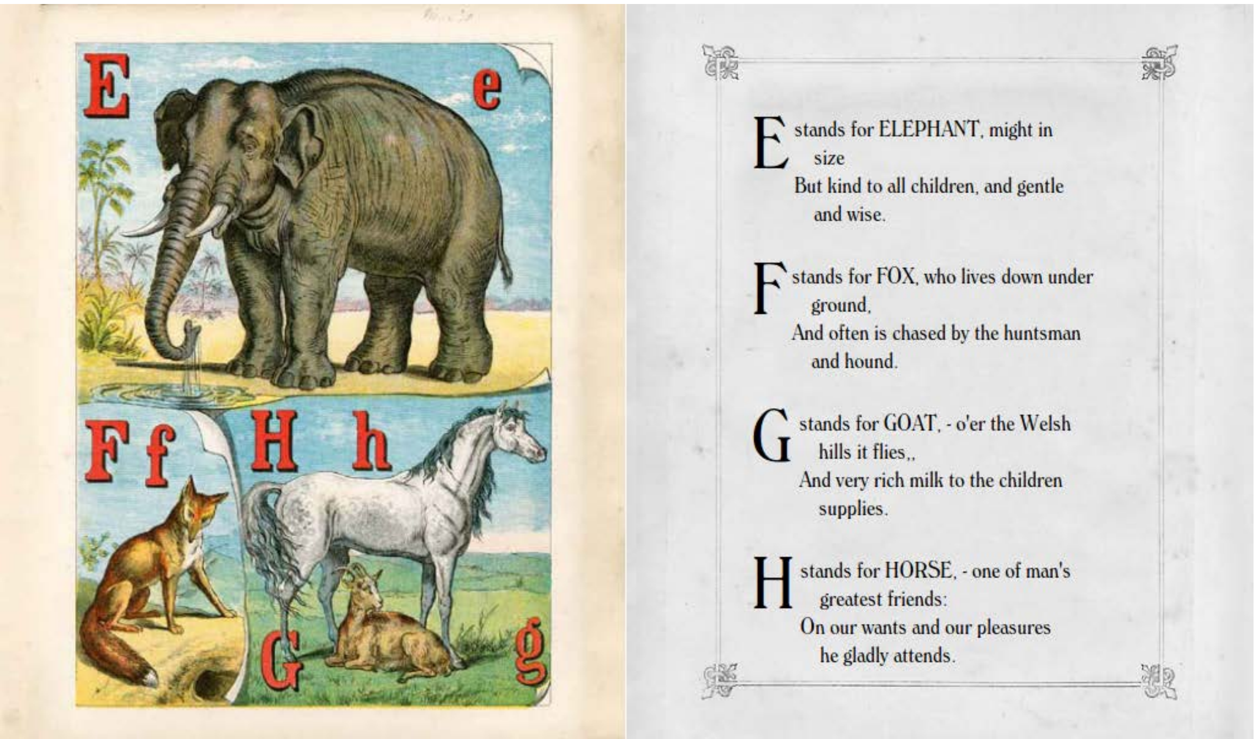
4.4 Creating Children’s Books with Multipage Background Images and Text

This section explains the proper way to create pages that contain a single background image and text. While there are many potential solutions, Amazon’s goal is to ensure that markup is easily portable with minimal effort. The provided template meets this goal by updating the CSS rules without changing the HTML.

4.4.1 Using Side-by-Side Images to Form a Double-Page Spread When Orientation-Lock Is Set to Landscape

Many books have two-page spread that consists of a single image. Other books have a two-page spread that consists of two side-by-side images.

In the example below, the double-page spread is 1024 x 600 pixels, which is full-screen resolution for the Kindle Fire (1st generation). The images for each page should have dimensions exactly half the width of the full screen: 512 x 600 pixels. The unique parts of each element are labeled using CSS IDs; the common parts use CSS classes. The left image displays on the left side of the spread. The right image is shifted to the right side of the page by defining a `margin-left` style set to the width of the left side image.



E stands for ELEPHANT, might in
size
But kind to all children, and gentle
and wise.

F stands for FOX, who lives down under
ground,
And often is chased by the huntsman
and hound.

G stands for GOAT, - o'er the Welsh
hills it flies,,
And very rich milk to the children
supplies.

H stands for HORSE, - one of man's
greatest friends:
On our wants and our pleasures
he gladly attends.

HTML

```
<div class="fs">
  <div id="fs1-left" class="leftPage"></div>
  <div id="fs1-right" class="rightPage"></div>
</div>
```

CSS

```
/* Region sized for both pages */
div.fs {
  height: 600px;
  width: 1024px; /* 2 x page width */
  position: relative;
}
div.leftPage {
  position: absolute;
  background-repeat: no-repeat;
  height: 600px;
  width: 512px; /* 1 x screen width */
}
div.rightPage {
  position: absolute;
  background-repeat: no-repeat;

  height: 600px;

  width: 512px; /* 1 x screen width /

 margin-left: 512px; /* this value equals the value of the left side image width */

}
```

4.4.2 Positioning Text Blocks

Specify the proper position and font size using percentages. This allows the position to scale consistently at different resolutions, ensuring compatibility across a wider range of devices and screens. Each paragraph should be grouped within a single `<div>` element, with multiple lines broken by `<br/>` elements. If custom line spacing is required, assign this via CSS style declarations instead of adding extra markup such as multiple `<div>` containers or extra line break tags.

The example in section 4.2.2, Requirement #2: Using Region Magnification (Pop-ups), expands on the two-page spread example and illustrates how to place text on top of a background image: text is positioned within a fixed spread block, uses percentages for the margin attribute, and is aligned and spaced via CSS.

4.4.3 Aligning Text

By default, text aligns to the upper left corner of the containing HTML element. Many books may have text that is right-aligned, bottom-aligned, or justified. The easiest way to identify the alignment is to imagine an outline around the text and identify which edges of the paragraph are associated with a margin (top, left, right, bottom). If the alignment is unclear, use the default upper left, although this makes positioning of the magnified element more difficult.

Never use non-breaking space (`&nbsp;`) characters for text alignment. Instead, use CSS top, right, bottom and left to position `<div>` elements that contain absolutely positioned text. Use two adjacent sides to position each <div> element. For example, top and left but never top, left, and bottom. CSS `text-indent` and `line-height` are useful in aligning text within HTML block elements.

5 Creating Fixed-Layout Graphic Novels/Manga/Comics

Graphic novels, manga, and comics (hereafter referred to as graphic novels) are similar to children's books, but present a unique challenge because they tend to be longer and have more complex content.

Graphic novels include a large amount of detail in images that displays on a 1920 x 1200 screen. To overcome this and other accessibility concerns, Amazon encourages the use of customized content and our Kindle Panel View feature, which optimizes the content for a high-resolution reading experience.

When designing for graphic novels, the following generic fixed-layout requirements also apply:

5.1 Metadata Fields Supporting Fixed-Layout Books

The OPF file specifies metadata necessary for fixed-layout books. For a demonstration, see the Graphic Novel example at www.amazon.com/kindleformat (under the **KindleGen Examples** heading).

Metadata	Description

`Layout can be specified using one of the following metadata fields:`
`1) <meta property="rendition:layout">pre-paginated</meta>`
`2) <meta name="fixed-layout" content="true"/>`
	Required. Identifies the book as having a fixed layout.
	Valid values for `rendition:layout` metadata are `reflowable` or `pre-paginated`. The default value is `reflowable`.
	Valid values for `fixed-layout` metadata

Metadata	Description
	are `true` or `false`. The default value is `false`.
`<meta name="original-resolution" content="1024x600"/>`	Required. Identifies the original design resolution of the content (“1024x600” is only an example). The pixel dimensions can have any positive integer value. These values must equal the overall aspect ratio of the original content.

`Orientation can be specified using one of the following metadata fields:`
`1) <meta property="rendition:orientation">landscape</meta>`
`2) <meta name="orientation-lock" content="landscape"/>`
	Optional.
	Valid values for `rendition:orientation` metadata are `portrait`, `landscape`, or `auto`. Locks the orientation of the book to either portrait or landscape. If the value is `auto`, both portrait and landscape modes are supported. The default value is `auto`.
	Valid values for `orientation-lock` metadata are `portrait`, `landscape` or `none`. Locks the orientation of the content to either portrait or landscape. If the value is `none`, both portrait and landscape modes are supported. The default value is `none`.

`<meta name="RegionMagnification" content="true"/>`	Optional. Enables Kindle Panel View and Kindle Text Pop-Up. Valid values are `true` or `false`. The default value is `false`. Enabling this feature requires additional CSS instructions as specified in section 5.4.
`<meta name="primary-writing-mode" content="horizontal-rl"/>`	Required for Virtual Panels in Manga with right-to-left reading order; optional for other fixed-layout books. Defines page rendering order, reading mode, and reader navigation (including Kindle Text Pop-Up, Kindle Panel View, and Kindle Virtual Panels). Valid values are `horizontal-lr`, `horizontal-rl`, `vertical-lr`, and `vertical-rl`. The default value is `horizontal-lr`.
`<itemref idref="page-id" properties="page-spread-left"/>`	Required for Virtual Panels in Comics and Manga; optional for other fixed-layout books. Allows publishers to specify page layouts (double-pages, facing pages) at the page level and can vary throughout the book. The page properties should be specified in the `itemref` elements (child of `<spine>` element in the OPF file). Valid values are `page-spread-left`,

Metadata	Description
	`page-spread-right`, `facing-page-left`, `facing-page-right`, and `layout-blank`. The value `layout-blank` can be used independently or in conjunction with other valid values. Default value is `layout-blank`.
`<meta name="book-type" content="comic"/>`	Required for all graphic-novels; optional for other fixed-layout books. Removes reader functionality (e.g., share) which may not be relevant for certain books such as children's. Valid values are `children` or `comic`.

5.2 Asset Requirements

When optimized for the 2013 Kindle Fire HD 8.9", graphic novels should maintain a 1920 x 1200 aspect ratio. The image resolution will differ depending on the zoom factor required for Kindle Panel View. However, Amazon recommends planning for a high quality reading experience at 2X magnification. Images must be in the JPEG format. Amazon recommends using an image resolution of 300 dpi or 300 ppi.

There are four standard zoom factors:

Zoom Factor	When to Use	Required Image Resolution
100%	Avoid using this zoom factor. It offers no magnification and poses an accessibility challenge for users.	1920 x 1200 pixels
125%	Only use this zoom factor when it is absolutely necessary to enlarge a very large panel. This allows the user to see a large action scene, but with the downside of limited enlargement.	2400 x 1500 pixels
150%	This is the default and preferred zoom factor. Use this zoom factor whenever possible.	2880 x 1800 pixels
250%	Only use this zoom factor on a two page spread image (two physical pages are displayed at once, and content appears especially small as a result). The downside is that the enlarged panel only represents a small portion of the original page.	4800 x 3000 pixels

5.3 Image Quality

Image quality for graphic novels requires that images follow the resolution standards listed in section 5.2, Asset Requirements, and maintain a consistent aspect ratio. Most importantly, optimize images for clarity of background art as well as readability of text. These two factors guarantee the highest quality for the graphic novel format.

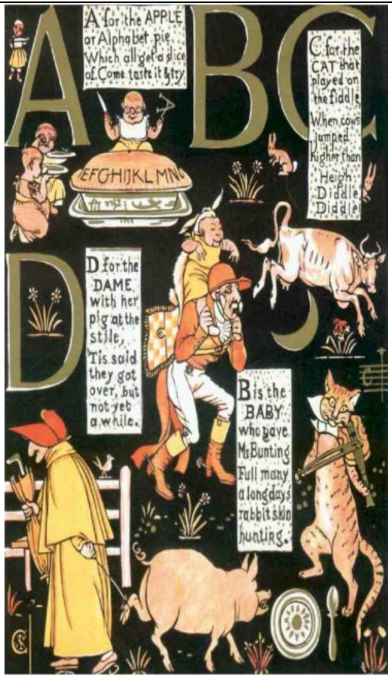
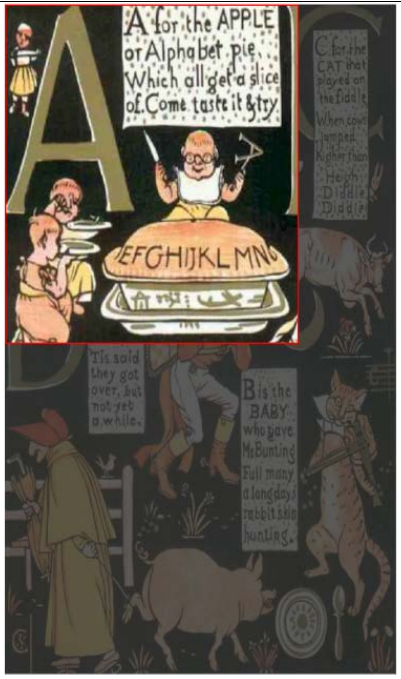
5.4 Panel View (Region Magnification)

Panel View for graphic novels offers a unique reading experience. It addresses accessibility and lets users experience the flow of action on each page in a high-resolution, easy-to-use manner. Users can dismiss Panel View at any time to view the entire page. For an example of Panel View, see the following images.

The user activates Panel View by double tapping a “tap target”. The active area (source element) is hidden and the Panel View (target element) is displayed.

To support Panel View, the following steps are required:

1. Set the tap target by creating a well-defined container (`<div>`) element that contains an anchor (`<a>`) element. The <div> provides the size and position of the tap target. The <a> is sized to fill the <div> and must specify the `app-amzn-magnify` class. The anchor should also have the following attributes stored in a JSON object as part of the data-app-amzn-magnify value:
   a. `"targetId":"<string:elementId>"` = unique element id of the Panel View HTML element that represents the enlarged region
   b. `"ordinal":<integer:reading order>"` = reading order of the magnification areas (the order in which panels appear as part of the reading flow)
2. Create a target view panel <div> element that is sized and positioned to display the action that best reflects the tap target.

 A for the APPLE or Alphabet pie Which all get a slice of Come taste it & try C for the CAT that played on the fiddle When cows jumped higher than Heigh Diddle Diddle EFGHIJKLMN D for the DAME with her pig at the stile, 'Tis said they got over, but not yet a while. B is the BABY who gave Mr Bunting Full many a long days rabbit skin hunting.	
Snapshot of fixed layout content	Snapshot of the same content with Panel View activated

Example:

```
<div>

  <img src="images/hij.jpg" alt="Comic Book Images" class="singlePage" />

</div>

<div id="pagehij-1">

  <a class="app-amzn-magnify" data-app-amzn-magnify='{"targetId":"pagehij-1-
magTargetParent", "ordinal":1}'></a>

</div>

…
```

```
<div id="pagehij-1-magTargetParent" class="target-mag-parent">
  <div class="target-mag-lb">
</div>
<div id="pagehij-1-magTarget" class="target-mag">
  <img  src="images/hij.jpg" alt="Comic Book Images"/>
</div>
</div>
```

5.5 Optimizing Content for the Graphic Novel Experience

5.5.1 Optimizing Tap Targets

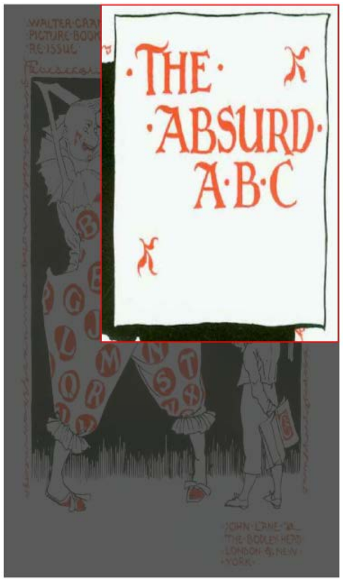
Tap targets should effectively cover 100% of the screen. This ensures that the user gets a magnified experience whenever the user double taps the graphic novel.

5.5.2 Optimizing View Panels

View panels should be 150% of the tap target by default. It is acceptable to use different size view panels to emphasize a specific action scene within the tap target.

Position view panels so that they convey where the primary action scene occurred on the original page. Typically, view panels are horizontally aligned to the left, center, or right edges and are vertically aligned to the top, center, or bottom edges.

When preserving context across multiple panels, it is acceptable to overlap slightly with other view panels.

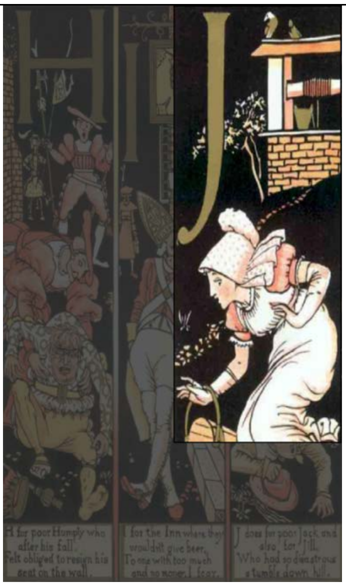
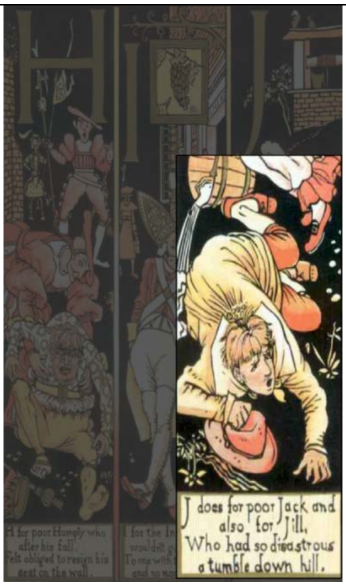


5.5.3 Optimizing for Wide or Tall Action Scenes

To use the default 150% default zoom factor, an action scene often needs to be divided into two view panels (typically a left and right or top and bottom). This is a better user experience than using a smaller zoom factor, because it preserves accessibility and gives the user a higher resolution reading experience.

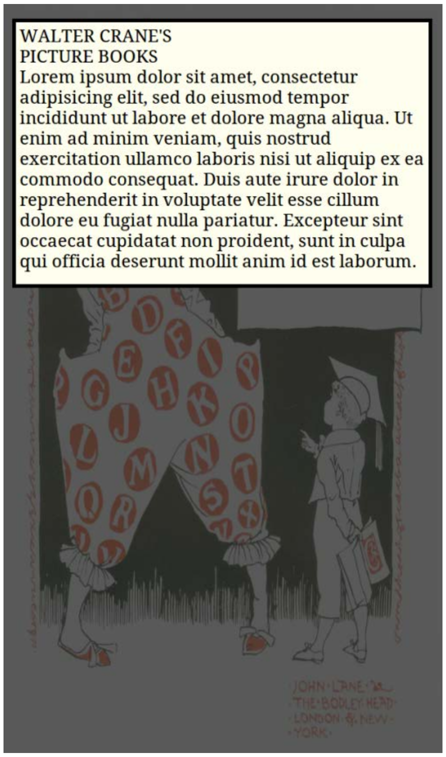
Split the tap targets so that the first tap target is between 50 and 75% the width of the entire area, and the second tap target is the remaining amount necessary to reach 100%. This ensures when a user double taps an area near the middle of the action panel, they experience the first view panel first, and then the second view panel when they move forward.

To preserve the flow of the action, view panels should display a small amount of overlapped action.

 First view panel of an action scene divided into two view panels	 J does for poor Jack and also for Jill, Who had so disastrous a tumble down hill. Second view panel of an action scene divided into two view panels

5.5.4 Optimizing for Large Text Blocks

To display large amounts of text, Amazon suggests a hybrid text treatment that mixes the experiences of the graphic novels and children's books. Amazon recommends limiting the use of the hybrid text treatment to sections of text that are too wide to be magnified effectively. The hybrid text treatment should mimic the formatting of the text it represents in line-height, italic and/or boldface, and general appearance. This provides a better user experience.



WALTER CRANE'S
PICTURE BOOKS
Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Hybrid Text HTML Example:

```
<div id="pageXXX-magTargetParent" class="target-mag-parent">

   <div class="target-mag-lb"></div>

   <div id="pageXXX-magTarget" class="target-mag">

      <div class="text">

        <p>WALTER CRANE'S <br />PICTURE BOOKS <br /></p>

        <p> Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis
nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis
aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat
nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui
officia deserunt mollit anim id est laborum. </p>

      </div>

   </div>

</div>
```

Hybrid Text CSS Example:

```
div.target-mag div.text{

  height: 100%;

  padding: 5px;

  background-color: #FFFFEF;

  font-size: 150%;

  font-family: "Georgia";
}
```

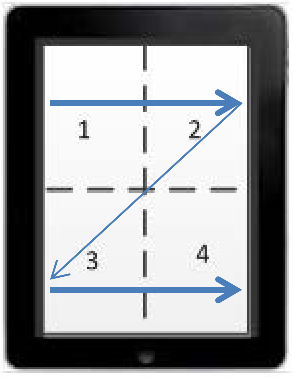
5.6 Virtual Panels in Comics and Manga

The Virtual Panels feature is activated for comics and manga books in the absence of publisher-provided panels. The `RegionMagnification` metadata is used to identify whether the publisher has provided panel information. If the publisher has designed the content with panels, the Kindle Virtual Panel view is not enabled.

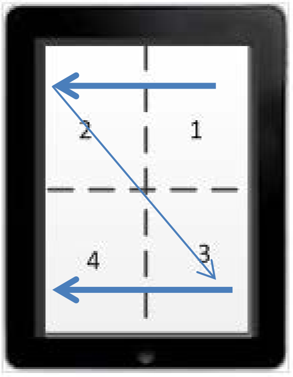
By default, every page is divided into four panels based on the `primary-writing-mode` value. The examples below indicate the order of the panels.

Example:

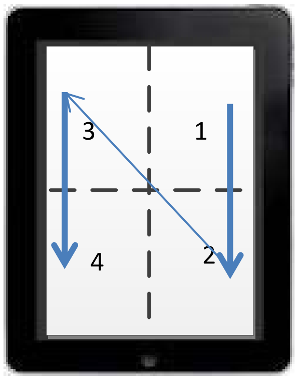
Portrait mode:



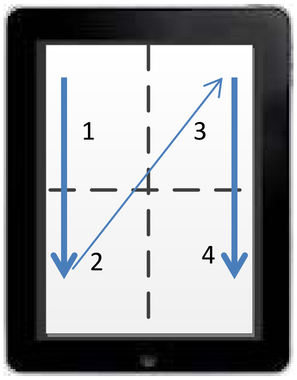
Horizontal-lr



Horizontal-rl

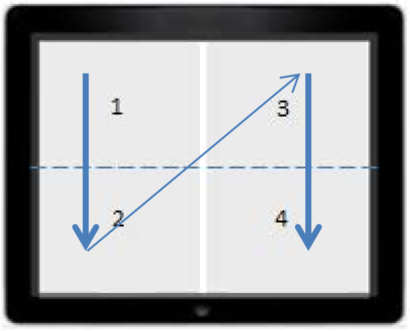


Vertical-rl

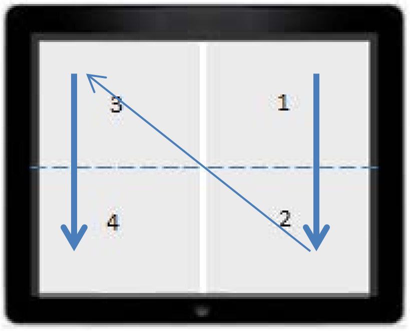


Vertical-lr

Landscape mode:



Vertical-lr and Horizontal-lr



Horizontal-rl and Vertical-rl

5.6.1 Requirement #1: Pairing Pages When Orientation-Lock Equals None

If orientation is not locked, content should be designed for both portrait and landscape mode. Also, every page is expected to have a defined definitive pair to support landscape orientation. In portrait orientation, the pairs are ignored.

All single pages should be tagged with the properties `facing-page-left` or `facing-page-right`. In this case, the renderer will add the spine while stitching two pages together.

Example:

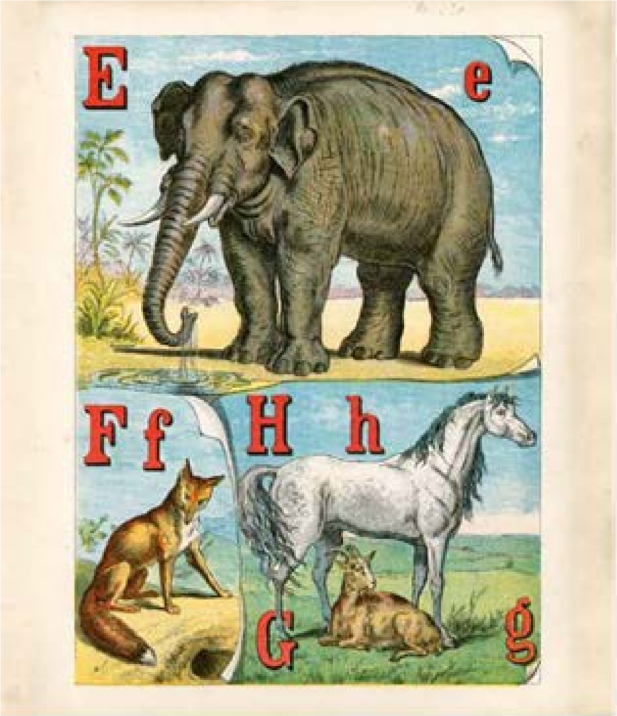
The following example shows a double-page spread with visual separator in landscape mode.

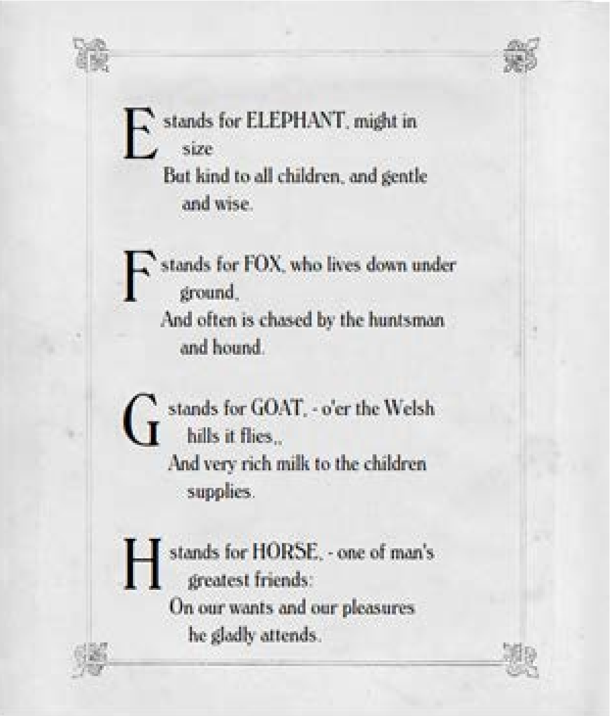
```
<spine>

       <itemref idref="page1" properties="facing-page-left"/>

       <itemref idref="page2" properties="facing-page-right"/>

</spine>
```





E stands for ELEPHANT, might in
size
But kind to all children, and gentle
and wise.

F stands for FOX, who lives down under
ground,
And often is chased by the huntsman
and hound.

G stands for GOAT, - o'er the Welsh
hills it flies,,
And very rich milk to the children
supplies.

H stands for HORSE, - one of man's
greatest friends:
On our wants and our pleasures
he gladly attends.

Double-page spreads should be tagged with the properties `page-spread-left` or `page-spread-right`. Every left page should have a right page associated and vice-versa. In this case, the renderer will not add the spine while stitching two pages together.

Example:

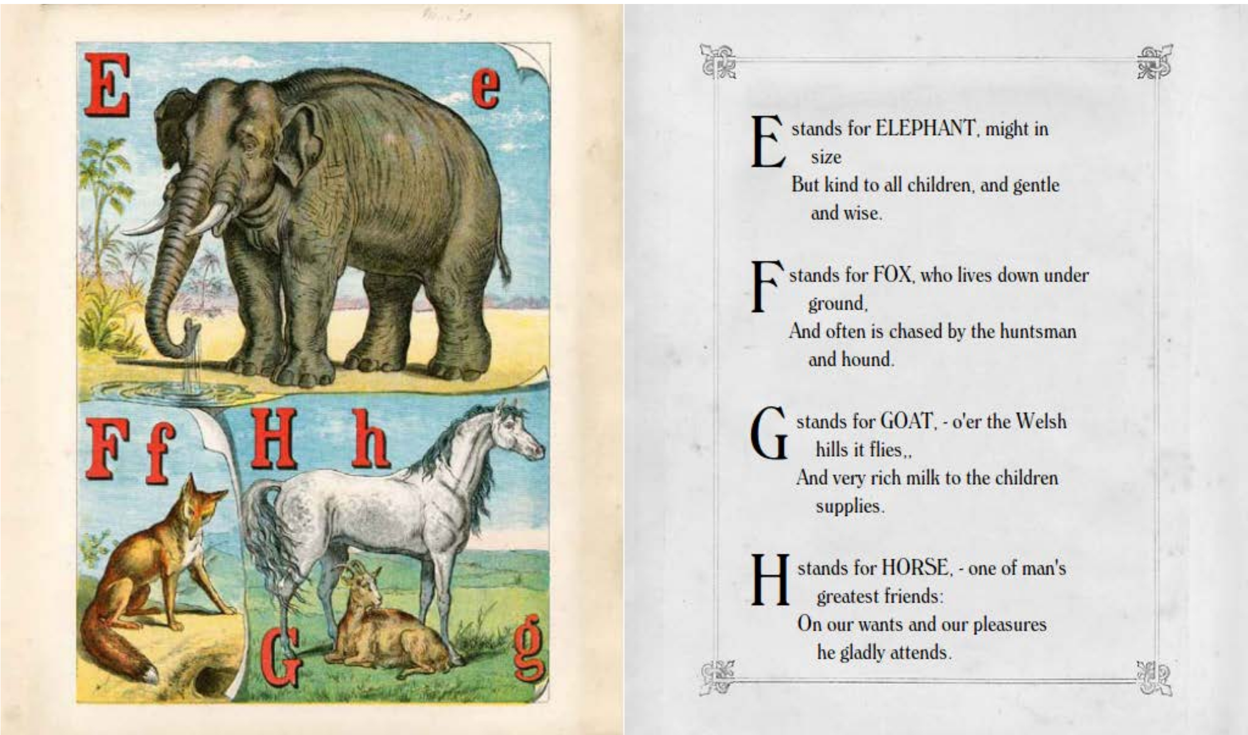
The following example shows a double-page spread without visual separator in landscape mode.

```
<spine>

       <itemref idref="page1" properties="page-spread-left"/>

       <itemref idref="page2" properties="page-spread-right"/>

</spine>
```



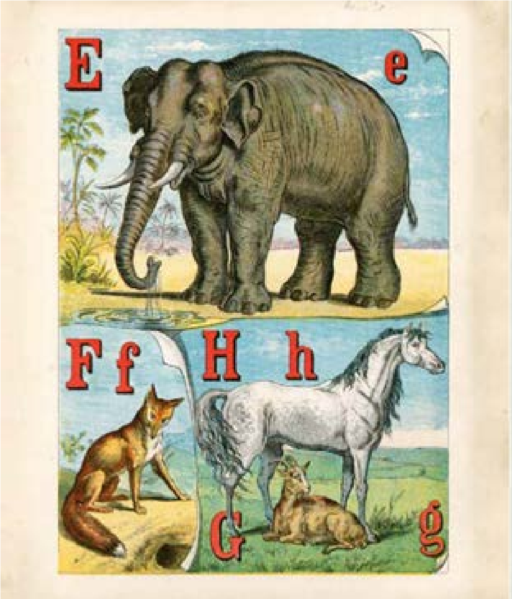
E stands for ELEPHANT, might in
size
But kind to all children, and gentle
and wise.

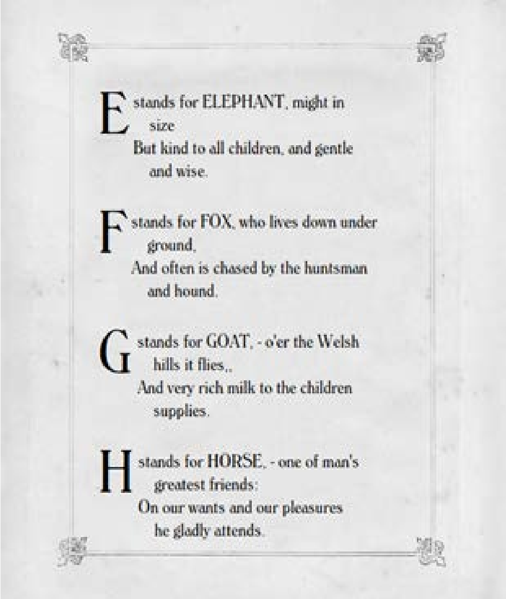
F stands for FOX, who lives down under
ground,
And often is chased by the huntsman
and hound.

G stands for GOAT, - o'er the Welsh
hills it flies,,
And very rich milk to the children
supplies.

H stands for HORSE, - one of man's
greatest friends:
On our wants and our pleasures
he gladly attends.

In portrait mode, the two pages will be rendered separately as shown below:





E stands for ELEPHANT, might in
size
But kind to all children, and gentle
and wise.

F stands for FOX, who lives down under
ground,
And often is chased by the huntsman
and hound.

G stands for GOAT, - o'er the Welsh
hills it flies,,
And very rich milk to the children
supplies.

H stands for HORSE, - one of man's
greatest friends:
On our wants and our pleasures
he gladly attends.

If none of the properties are specified, Kindle assumes `facing-page-left` and `facing-page-right` for alternate pages based on the book's writing mode.

The following example assumes `primary-writing-mode` equals `horizontal-lr` or `vertical-lr`.

Example:

```
<spine>
```

```
      <itemref idref="page1" /> <!—assumed to be properties="facing-page-left" -->

      <itemref idref="page2" /> <!—assumed to be properties="facing-page-right" -->

      <itemref idref="page3" properties="page-spread-left"/> <!—double page spread’s left viewport -->

      <itemref idref="page4" properties="page-spread-right"/> <!—double page spread’s right viewport -->

</spine>
```

The following example assumes `primary-writing-mode` equals `horizontal-rl` or `vertical-rl`.

Example:

```
<spine>

      <itemref idref="page1" /> <!—assumed to be properties="facing-page-right" -->

      <itemref idref="page2" /> <!—assumed to be properties="facing-page-left" -->

      <itemref idref="page3" properties="page-spread-right"/> <!—double page spread’s right viewport -->

      <itemref idref="page4" properties="page-spread-left"/> <!—double page spread’s left viewport -->

</spine>
```

In cases where a left page does not have an equivalent right page (or vice-versa), the publisher should insert a blank HTML page and add the property `layout-blank` to the page, unless it is the last page. Optionally, the blank page can include the book title and watermark by design.

Pages with the `layout-blank` property are only rendered in landscape mode and are ignored in portrait mode.

In some cases, the publisher may wish to insert a blank page that always renders in both portrait and landscape modes. In this instance, do not use the `layout-blank` property. Use the same facing (or double-page spread) rules as noted above and reference an image file that contains a “blank” jpeg.

The following example assumes `primary-writing-mode` equals `horizontal-lr` or `vertical-lr`.

Example:

```
<spine>

      <itemref idref="page1" /> <!—assumed to be properties="facing-page-left" -->

      <itemref idref="blank-page"  properties="layout-blank"/> <!—assumed to be properties="facing-page-right". Ignored in portrait mode. -->

      <itemref idref="page2" properties="page-spread-left"/> <!—double page spread’s left viewport -->

      <itemref idref="page3" properties="page-spread-right"/> <!—double page spread’s right viewport -->

</spine>
```

6 Audio and Video Guidelines

Currently, Kindle Edition with Audio/Video content is available on Fire tablets (2nd generation and later), iPad, iPhone, and iPod Touch. Audio and video content is not supported on Kindle e Ink devices (customers can read the book, but any audio or video is replaced with a message that it is not supported on this device).

KF8 features are not currently supported in Kindle Edition with Audio/Video content. The file delivered to Amazon should be a Mobi 7 EPUB with self-contained audio and video or a Mobi 7 .prc file with self-contained audio and video. (If delivering a .prc, make sure the file was created using the latest version of KindleGen available from www.amazon.com/kindleformat).

Amazon's Kindle Direct Publishing Platform (KDP) does not currently accept Kindle Edition with Audio/Video content.

To add audio and/or video content to your Kindle book, follow the guidelines and examples below.

6.1 Embedded Video

To embed a video inside a Kindle book, add a standard HTML 5 tag such as the following:

Example:

```
<video id="video_1" src="movie.mp4" controls poster="start.jpg" title="Video about
...">

<br/><br/><br/> "There is video content at this location that is not currently
supported for your device. The caption for this content is displayed below."
<br/><br/><br/>

</video>
```

- **src tag:** (Required) Identifies the embedded video file.
- **title tag:** (Required) Identifies the description of the video.
- **poster tag:** (Required) Identifies the placeholder image file. Users see the placeholder in the eBook before the video is played. The placeholder could be the first frame of the video or a representative frame, depending on your preference. (If this file is not specified, a blank black image is displayed.)
- **controls tag:** (Required, unless you provide an image for use in starting the video playback) Tells the Kindle application to display controls for the embedded video.

  Note: The Kindle application may render a play button on top of the poster frame. It appears in the middle of the frame.
- **text content:** (Required) Devices that do not support video content display the text between the `<video>` and `</video>` tags. If users view this eBook on a device that does not support video, they see this text instead. (**Example:** “There is content at this location that is not currently supported for your device. The caption for this content is displayed below.”)
- **id tag:** (Optional) Must be unique to the document if it is used.

6.2 Streaming Video

Streaming video is not supported at this time. Use embedded video instead.

6.3 Embedded Audio

To embed an audio file inside a Kindle book, add a standard HTML 5 tag such as the following:

Example:

```
<audio id="audio_1" src="audio.mp3" controls title="Audio about ...">

<br/><br/><br/>
```

```
"There is audio content at this location that is not currently supported for your
device. The caption for this content is displayed below."

<br/><br/><br/>

</audio>
```

- **src tag:** (Required) Identifies the embedded audio file, which must be in MP3 format.
- **title tag:** (Optional) Identifies the description of the audio.
- **controls tag:** (Required, unless you provide an image for use in starting the video playback) Tells the Kindle application to display controls for the embedded audio.
- **text content:** (Required) Devices that do not support audio content display the text between the `<audio>` and `</audio>` tags. If users view this eBook on a device that does not support audio, they see this text instead. (**Example:** “There is content at this location that is not currently supported for your device. The caption for this content is displayed below.”)
- **id tag:** (Optional) Must be unique to the document if it is used.

6.4 Streaming Audio

Streaming audio is not supported at this time. Use embedded audio instead.

6.5 Multimedia Directory

When adding audio and video files to an eBook, create an “audiovideo” directory for storing these files. When referring to the audio or video file, include the directory name (**Example:** “audiovideo/filename”) in the HTML.

6.6 Audio Guidelines

Amazon recommends using stereo channels in the MP3 source where possible, because Kindle supports playing back audio in stereo. Use as high a bitrate as you need to hear the audio content appropriately; this is a judgment call. For good results, consider bitrates between 128 kbps and 256 kbps (kilobits per second). The maximum supported by Kindle is 320 kbps at variable bit rate.

6.7 Video Guidelines

Since audio content can be part of the video content, Amazon recommends using stereo channels in your audio source where possible. Kindle supports playing back audio in stereo.

This is the **ideal** source spec:

Attribute	Setting
Dimensions	Widescreen: 704 x 396 (or any other widescreen ratio); Fullscreen: 640 x 480
Interlacing	Progressive
Color Space	4:2:0 YUV
Video Codec	H.264 (recommended), MPEG-2
Video Mode	VBR (recommended) or CBR
Video Bit Rate	2500 kbps or higher recommended
Key Frame Interval	2 or 4 seconds recommended
Audio Codec	MP3
Audio Bit Rate	256 kbps or higher recommended
Audio Sample Rate	48 kHz (recommended), 44.1 kHz

The following container formats are acceptable:

Container	File Extensions	Mime Type	RFC
MP4	.mp4	video/h264	RFC3984
MPEG-2 video file	.mpg, .mpeg	video/mpeg	RFC2045, RFC2046
MPEG-2 program stream	.ps	video/mp2p	RFC3555
MPEG-2 transport stream	.ts	video/mp2t	RFC3555

Will not work: any other video codec (such as Windows Media, Apple ProRes), AC3 audio, audio >2 channels

6.8 Audio and Video Metadata

Amazon requires that publishers (or their conversion houses) provide a description of the audio and video file, and the duration of the file in minutes and seconds, in the HTML immediately after the audio and video file is specified.

Example:

```
<p align="center" style="text-indent:0px">

<video id="video_1" src="movie.mp4" controls poster="start.jpg" title="How to create
Kindle content (5:01)">

<br/><br/><br/>

"There is video content at this location that is not currently supported for your
device. The caption for this content is displayed below."

<br/><br/><br/>

</video>

<strong>How to create Kindle content (5:01)</strong>

</p>
```

6.9 NCX File

When creating eBooks with audio and video content, Amazon requires the creation of an NCX file that points to the audio and video assets. This file should list all video and audio files in reading order, with links to where they occur in the book. For descriptions of the audio and video files, reuse the same audio and video metadata. (**Example:** A link to the video clip in section 6.8 would say “How to create Kindle content (5:01)”.) This information should be embedded in the NavList portion of the NCX file.

6.10 Images with Play Controls

It is possible to tag images so that they can be played by clicking on them. The minimum pixel width and height for such images is 45 pixels by 45 pixels.

To add play controls to the image, superimpose the Amazon PLAY icon onto the lower right-hand side of any image via Photoshop or similar program. Then add the following tag to the HTML (in this example, the audio file has an `id` attribute of “audio1” and no `controls` tag):

Example:

```
<a onclick="play(this);" data-AmznAudioTag="audio1"><img src="play.jpg"/></a>
```

However, if you are using KindleGen version 1.2 or earlier, use the following HTML instead:

Example:

```
<a onclick="document.getElementById('audio1').play()"><img src="play.jpg"/></a>
```

The Amazon PLAY icon is available upon request.

6.11 File Names Are Case-Sensitive

Kindle books are case-sensitive. When referencing audio and video files within the HTML, be careful about case sensitivity. (**Example:** “audiovideo/ThisFile.mp4” is different from “audiovideo/Thisfile.mp4”.)

To indicate a file in a directory, use “/” characters and not “\” characters. (**Example:** “multimedia/ThisFile.mp4” is valid, but “multimedia\ThisFile.mp4” is not.)

6.12 Confirm Correct Mime-Type

When specifying video and audio files in the OPF, make sure that they have the correct mime-types, depending on the extensions used. (**Example:** MP4 video files should have a mime-type of “video/mp4” and not “audio/mpeg”.)

6.13 File Size

Limit the combined file sizes of all audio and video files to 600 MB or less for each title. If the files are larger than 600 MB, manually transcode them to reduce the file size(s). (The total maximum audio/video file size that can be converted from EPUB via KindleGen is 650 MB.)

Limit the number of individual audio and video files within each title to 1,000 or fewer.

6.14 Narration

Amazon does not currently accept any audio or video books with read-along content, which is defined as someone reading the full text or multiple pages of text from the book in either audio or video format.

6.15 Table of Contents

All books must have a TOC that begins with "List of Audio and Video." This line should be bold. On the next line, begin an indented list of hyperlinks to each audio and video file. The text of the link should include the file description, with the file duration in parentheses.

Use these guidelines for all audio and video files longer than 10 seconds that a user might want to see listed.

Here is an example of how the code below would display in the TOC:

List of Audio and Video

This is my video (5:01)

This is my audio (1:10)

This is the corresponding code for the example above:

```
<video id="video_1" src=" audiovideo//movie.mp4" controls poster="start.jpg"
title="This is my video (5:01)">

<br/><br/><br/>”There is video content at this location that is not currently
supported for your device. The caption for this content is displayed
below.”<br/><br/><br/>

</video>

<br>This is my video (5:01)</br>

<audio id="audio_1" src=" audiovideo//audio.mp3" controls title="This is my audio
(1:10)">

<br/><br/><br/>
```

```
”There is audio content at this location that is not currently supported for your
device. The caption for this content is displayed below.”

<br/><br/><br/>

</audio>

<strong>This is my audio (1:10)</strong>
```

6.16 Guidance on Media Captions

Media captions describe the audio and video files to the user. Here are some general guidelines:

- Captions should not be generic. They should describe the media content they are referencing.

  These media captions are not a good user experience:

  1. Media 1
  2. Track 1
  3. Audio 1
  4. Video 1

  These media captions describe the content:

  1. Introduction by the Author
  2. The Making of the Movie

- Media captions cannot include file extensions (.mp3, .mp4, etc.).

6.17 Custom Sample File

Amazon requires that publishers create and supply a custom sample for each Kindle Edition with Audio/Video. The sample file should include a full TOC and an audio/video list, with live links to only the content in the sample file.

The sample file should include at least one of each type of media available in the full file, including both audio and video, if applicable.

The sample file must have a “Buy It Now” link added to the end, or where appropriate.

7 Dictionary Overview

A dictionary is a Kindle eBook (.mobi file) with extra tags added to support search and lookup functionality. Dictionary eBooks:

- Contain a primary index: a list of words or sentences that are sorted in alphabetical order. Readers can search quickly in this list by typing the beginning of the word and selecting the desired entry.
- Are marked as dictionaries. The input and output languages of the dictionary must be defined properly so that Kindle devices can use the dictionary for in-book lookup.

For example, an English (monolingual) dictionary lists English as both the input and output language. A French-English dictionary lists French as the input language and English as the output language. To build a bidirectional bilingual dictionary (example: Spanish-French and French-Spanish), you must create two separate eBooks: one for Spanish-French and one for French-Spanish.

A Kindle dictionary should have all the same components as a normal Kindle eBook. There should be an OPF file and HTML files with CSS. Every dictionary should have:

- A cover image

- A copyright page
- Any relevant front or back matter (explanations of symbols, appendices, etc.)
- Definitions of words (this is the bulk of the file)

7.1 Dictionary Entry Template

A simple, clean format works best for in-book lookup. Amazon recommends these dictionary content and formatting features for a high-quality user experience:

- The headword (word being defined) should come first in the entry, and should be distinguished from surrounding content (on its own line, left flush, in bold).
- Every dictionary entry should contain a definition (or translation, for bilingual dictionaries).
- Horizontal rules should appear between each entry.
- Each alphabet letter section should begin on a new page.
- Images should be avoided (see section 3.6 for image constraints).
- Tables should not be used (see section 3.7 for table constraints).
- Font color, size and typeface should not be forced (see section 3.1 for text guidelines).

7.2 Metadata: Creating the OPF File

The OPF file of a dictionary is similar to that of other Kindle books, except that it contains specialized metadata tags in the `<x-metadata>` section. These extra tags in the OPF file set the source language and the target language for the dictionary. If the dictionary has multiple indices, the OPF file also specifies the name of the primary lookup index.

- The `<DictionaryInLanguage>` element contains the ISO 639 language code for the language of the books this dictionary is designed to be used on. For a Spanish-French dictionary, the input language is Spanish.
- The `<DictionaryOutLanguage>` element contains the ISO 639 language code for the language of the definitions returned by the dictionary. For a Spanish-French dictionary, the output language is French.
- The `<DefaultLookupIndex>` element indicates the index that will open first when the dictionary is used for lookup from another eBook. The default index must be specified if the dictionary has more than one index. The index name that is wrapped in the `<DefaultLookupIndex>` tags in the OPF file also should appear as the value of the `name` attribute in the `<idx:entry>` elements in the content of the dictionary (see section 7.3.3).

As an example, for a Spanish-French dictionary, the input language code would be **`es`**; the output language code would be **`fr`**, and the primary index might be named **`Spanish`**.

Example: (Bilingual Dictionary Metadata)

```
<x-metadata>
<DictionaryInLanguage>es</DictionaryInLanguage>
<DictionaryOutLanguage>fr</DictionaryOutLanguage>
<DefaultLookupIndex>Spanish</DefaultLookupIndex>
...
</x-metadata>
```

For a monolingual dictionary, the same language code must appear twice: once to identify the input language, and again to identify the same language as the output language. To identify a regional variant for the source and/or target languages, a regional suffix may be appended to the ISO 639 code. For example, **`en-gb`** indicates British English, while **`en-us`** indicates US English.

Example: (Monolingual Dictionary Metadata, Regional Variant)

```
<x-metadata>
```

```
<DictionaryInLanguage>en-us</DictionaryInLanguage>
<DictionaryOutLanguage>en-us</DictionaryOutLanguage>
<DefaultLookupIndex>headword</DefaultLookupIndex>
...
</x-metadata>
```

7.3 Basic Dictionary HTML

7.3.1 Format

Dictionaries for Kindle must be in Mobi 7 format, not in KF8. For this reason, the dictionary layout should use a single-column format. Multiple columns and sidebars are not supported in Mobi 7 format.

7.3.2 Frameset element

All dictionaries must have an **`<mbp:frameset>`** element as the first child of the `<body>` element. This frameset element contains all of the **`<idx:entry>`** elements of the dictionary.

The namespace for this **`<mbp:frameset>`** element is `xmlns:mbp="http://www.kreutzfeldt.de/mmc/mbp"` and it must be declared in the root `<html>` element of the XHTML document.

Example:

```
<html xmlns:math="http://exslt.org/math" xmlns:svg="http://www.w3.org/2000/svg"
xmlns:tl="http://www.kreutzfeldt.de/tl"

xmlns:saxon="http://saxon.sf.net/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xmlns:cx="http://www.kreutzfeldt.de/mmc/cx"
xmlns:dc="http://purl.org/dc/elements/1.1/"

xmlns:mbp="http://www.kreutzfeldt.de/mmc/mbp"
xmlns:mmc="http://www.kreutzfeldt.de/mmc/mmc"
xmlns:idx="http://www.mobipocket.com/idx">

<head><meta http-equiv="Content-Type" content="text/html; charset=utf-
8"></head>

<body>

<mbp:frameset>

<idx:entry name="english" scriptable="yes" spell="yes">

<idx:short><a id="1"></a>

       <idx:orth value="aardvark"><b>aard•vark</b>

       <idx:infl>

       <idx:iform value="aardvarks"></idx:iform>

       <idx:iform value="aardvark’s"></idx:iform>

       <idx:iform value="aardvarks’"></idx:iform>

</idx:infl>

</idx:orth>

<p> A nocturnal burrowing mammal native to sub-Saharan Africa that feeds
exclusively on ants and termites. </p>

</idx:short>
```

```
</idx:entry>
```

[...other entries…]

```
</mbp:frameset>
</body>
</html>
```

7.3.3 Headword Index

In order to make an alphabetical index of headwords, it is necessary to use special tags that are not standard HTML. The source still will be valid XHTML with these added `<idx>` mark-ups.

<idx:entry>..</idx:entry>

The `<idx:entry>` tag marks the scope of each entry to be indexed. In a dictionary, each headword with its definition(s) should be placed between `<idx:entry>` and `</idx:entry>`. Any type of HTML may be placed within this tag.

The `<idx:entry>` tag can carry the `name`, `scriptable`, and `spell` attributes. The `name` attribute indicates the index to which the headword belongs. The value of the `name` attribute should be the same as the Default Lookup Index name listed in the OPF. The `scriptable` attribute makes the entry accessible from the index. The only possible value for the `scriptable` attribute is `"yes"`. The `spell` attribute enables wildcard search and spell correction during word lookup. The only possible value for the `spell` attribute is `"yes"`.

Example:

```
<idx:entry name="english" scriptable="yes" spell="yes">
```

The `<idx:entry>` tag also may carry an `id` attribute with the sequential id number of the entry. This number should match the value of the `id` attribute in an anchor tag used for cross-reference linking:

Example:

```
<idx:entry name="japanese" scriptable="yes" spell="yes" id="12345">
<a id="12345"></a>
```

The entry id number is not used for in-book lookup; instead, the wordform entity to be indexed for lookup must be contained in the `<idx:orth>` element as follows.

<idx:orth>..</idx:orth>

The `<idx:orth>` tag is used to delimit the label that will appear in the index list and that will be searchable as a lookup headword. This is the text that users can enter in the search box to find an entry.

Example:

```
<idx:orth>Label of entry in Index</idx:orth>
```

Here is an example of an extremely simple entry that could be part of an English dictionary. From this example code, the word "chair" would appear in the index list and would be searchable by users.

Example:

```
<idx:entry>
  <idx:orth>chair</idx:orth>
  A seat for one person, which has a back, usually four legs, and
  sometimes two arms.
<idx:entry>
```

The value attribute can be used on the <idx:orth> tag to include a hidden label in the entry. This attribute maintains lookup functionality in the presence of the special formatting that commonly appears on headwords in dictionaries.

Example:

```
<idx:orth value="Hidden Label of entry in Index">Display format</orth>
```

If the headword should be displayed in the dictionary with a superscripted number to indicate homographs, with a registered trademark symbol, with middle dots to separate syllables, or with any other added symbols, this special formatting should appear on the text between the <idx:orth> tags, but not on the text in the value attribute. The text in the value attribute should match exactly the form to be used for lookup. If a value attribute is not supplied, then the entity between the <idx:orth> tags will be indexed for lookup. If middle dots, superscripted numbers, or any other symbols are included in the text between the <idx:orth> tags, then *in-book lookup will fail* unless a hidden label with the lookup form is supplied in the value attribute.

Example:

```
<idx:orth value="Amazon">A•ma•zon®<sup>3</sup></orth>
```

If the dictionary uses more than one orthographic script, then the format attribute on the <orth> tag can be used to identify each script for building the index.

Example:

```
<idx:orth format="script name">
```

Along with this primary index of headwords for all entries in the dictionary, in-book lookup also requires a supplementary index of inflected forms for each headword. To build the hidden inflection index, additional data should be nested within the <idx:orth> tag as follows.

7.4 Inflections for Dictionaries

Dictionaries should be built so that multiple inflected forms of a single root word all access the same entry. A complete list of inflected wordforms should be provided for every headword. If an entry uses multiple orthographies, then separate inflections must be provided for each orthography.

7.4.1 Inflection Index

To construct the hidden inflection index, the inflected wordform data should be wrapped within <idx:infl> and <idx:iform /> tags nested inside the <idx:orth> element. This index will not be directly searchable by the user, but instead will be used for in-book lookup.

<idx:infl>..</idx:infl>

The <idx:infl> element may contain multiple <idx:iform /> elements. The <idx:iform /> elements are always empty elements, and are used only to carry attributes, not visible content. The value attribute indicates the inflected forms that make up the inflection index.

Example:

```
<idx:orth>record
  <idx:infl>
    <idx:iform value="records" />
    <idx:iform value="recording" />
    <idx:iform value="recorded" />
  </idx:infl>
</idx:orth>
```

The <idx:infl> tag, the <idx:iform /> tag, and the value attribute are mandatory. The <idx:infl> element also may carry an optional inflgrp attribute to denote part of speech, and the <idx:iform /> element may carry an optional name attribute to indicate the inflection paradigm category. For languages that use extensive inflection, including these optional categories will expand the size of the inflection index, and may result in slower performance during word lookup.

Example:

```
<idx:orth>record
  <idx:infl inflgrp="noun">
    <idx:iform name="plural" value="records" />
  </idx:infl>
  <idx:infl inflgrp="verb">
    <idx:iform name="present participle" value="recording" />
    <idx:iform name="past participle" value="recorded" />
    <idx:iform name="present 3ps" value="records" />
  </idx:infl>
</idx:orth>
```

The values listed as attributes of the `<idx:iform />` tag will be invisible to the user, but rather will provide the information needed to redirect from inflected forms to the associated headwords during in-book lookup. To inform the user about parts of speech or inflection paradigms, additional text should be included in the body of the entry (i.e., alongside the definition and examples).

<idx:key>..</idx:key> (DEPRECATED)

Like the `<idx:infl>` tag, the `<idx:key>` tag is designed to enable search for an entry in the index by means of an alternative lookup wordform. However, the presence of `<idx:key>` tags in a Kindle dictionary can create instability in the lookup functionality, and can interfere with the operation of the exact-match parameter (see section 7.4.2). For these reasons, the use of `<idx:key>` tags in Kindle dictionaries is deprecated. Instead, `<idx:infl>` and `<idx:iform />` tags should be used to wrap the alternative lookup forms.

7.4.2 Exact-match parameter

By default, the Kindle device uses a fuzzy algorithm for matching diacritics during word lookup. Languages that use contrastive diacritics to distinguish between distinct word forms should use the `exact="yes"` attribute in the `<idx:iform />` tag to force exact match of diacritics during lookup.

Example:

```
<idx:entry name="spanish" scriptable="yes" spell="yes">
   <a id="12345"></a>
      <idx:orth value="uña"><b>uña</b>
            <idx:infl>
                  <idx:iform value="uñas" exact="yes" />
            </idx:infl>
      </idx:orth>
```

Setting the `exact` parameter to `"yes"` forces the device to match *uñas* to the headword *uña* (‘fingernail’), and prohibits a match to *una* (‘one’).

7.5 Building a Dictionary with Kindlegen

When building a dictionary with Kindlegen via the command line, use the following syntax:

```
kindlegen.exe [filename.opf] -c2 –verbose -dont_append_source
```

If the dictionary entries are contained in a single, very large XHTML file, then Kindlegen may not be able to build the dictionary. If the dictionary fails to build, this problem may be resolved by splitting the dictionary content into two or more XHTML files.

For more guidance on using Kindlegen, please see section 2.2.1.

7.6 Testing Kindle Dictionaries

7.6.1 Format Testing

Amazon recommends verifying that the converted dictionary is properly formatted to provide a good visual experience for the user. Check the formatting of the definitions by paging through the dictionary and reading several definitions. (The format of the dictionary may be checked using Kindle Previewer or any Kindle device; however, lookup testing requires the use of an e Ink device.)

- Check words for unsupported characters, broken or joined words, proper display of accented characters, symbols, pronunciation guide, etc.
- Check that there are no typos.
- Check that links (if present) are working correctly. (Links will be disabled in the in-book lookup window, but links should function inside the dictionary itself.)
- If any images are used, check that these images are clear and readable.
- Check that the font color and typeface are not forced.

7.6.2 Lookup Testing

Amazon recommends verifying that definitions return correctly when the dictionary is used to look up words in other books. This component of testing can be done only with e Ink devices (not including Previewer), because only e Ink devices allow the user to set the default dictionary for lookup.

- Sideload the dictionary onto the e Ink device. To do this, connect the Kindle to your computer with a USB-to-mini-USB cord. Your computer should detect the device. In the window that pops up, you should see a folder called Documents. Put the dictionary file into this folder, and then eject your Kindle from the computer.
- Set the test dictionary as the default dictionary for lookup:
  - Kindle Paperwhite: Go to **Home > Menu > Settings > Device Options > Language and Dictionaries > Dictionaries > [Source Language]**
- Look up a variety of words to see what definition is returned. Open a title other than the dictionary, select a word, and note the definition returned in the lookup window. If lookup fails entirely, check for errors in the HTML tagging.

  Suggestions of words to look up include:
  - Conjugations of regular and irregular verbs.
    - Example: walk, walks, walked, walking; go, goes, went, gone, going.
  - Nouns, adjectives, adverbs and their conjugations/declensions.
    - Example: desk, desks; wolf, wolves; hot, hotter, hottest.
  - Grammatical and punctuation conventions commonly used in the language.
    - Example: contractions, elisions, verbs with clitic pronouns.
- Check the index view of the dictionary. To do this, open the dictionary and start typing a word in the Search box. An alphabetized list of headwords should appear and should update dynamically based on which letters are typed. Selecting a headword from the index list should redirect the user to the dictionary entry for that headword.

8 Media Queries

Media queries are blocks of CSS code that allow content creators to apply different styles to specific Kindle devices (or a group of devices) using only one style sheet. Amazon has implemented media queries as a way to help content creators build a better customer experience across devices.

Amazon recommends that content creators only use media queries if they solve a problem or provide a better customer experience. For example, you can use media queries to:

- Create custom drop cap solutions for specific devices or groups of devices.
- Change light-colored text (yellow, baby blue, pink, etc.) to darker colors that provide better contrast on e Ink while retaining the original color on tablet devices.
- Increase the font size for fixed-format text pop-ups on e Ink devices separately from tablets to accommodate the difference in screen sizes.
- Display colored borders on e Ink and colored backgrounds on tablets independently from each other, allowing you to better replicate the print experience on tablets without sacrificing the reading experience on e Ink devices.

This section describes ways that you can use media queries to customize the reading experience on Kindle e Ink devices, Fire tablets, and iPads. You can also use these same principles across all Kindle platforms for devices of all aspect ratios.

Media queries are part of the W3 standard. For more information, visit http://www.w3.org/TR/css3-mediaqueries/

8.1 Media Query Guidelines

Support for two new media types enables content creators to use specific CSS based on the Mobi or KF8 file format: `amzn-mobi` and `amzn-kf8`.

- For KF8 CSS styles, use the media query `@media amzn-kf8`. This is only applied for the KF8 format.
- For Mobi CSS styles, use the media query `@media amzn-mobi`. This is only applied for the Mobi format.

The `@media screen` and `@media all` styles continue to apply to both KF8 and Mobi.

8.1.1 Media Query Guideline #1: Use Correct CSS Syntax

Media queries consist of two parts: (1) the selector, which specifies the conditions of the media query; and (2) the declaration block, which is rendered when the conditions of the media query are met.

In the following example, the blue background color is only applied if the format of the book is KF8 and the aspect ratio of the device is 1280 x 800.

Example:

```
/* Kindle Fire (All) Formatting. */
@media amzn-kf8 and (device-aspect-ratio:1280/800) {
      .blue_background {
         background-color: blue;
      }
   }
```

8.1.2 Media Query Guideline #2: Add a CSS Comment Before Each Media Query

Amazon recommends that you add a CSS comment before each media query to clarify which device you are targeting. (A CSS comment starts with /* and ends with */.)

Example:

```
/* Kindle Fire (All) Formatting */
```

CSS comments are invisible to the customer, but they make the code much easier to navigate and troubleshoot for anyone who works on the file.

8.1.3 Media Query Guideline #3: Always Use Non-Media Query Code To Target E-Ink Devices

Always optimize your non-media query (“default”) code for Kindle e Ink devices (including Kindle Voyage and Kindle Paperwhite). The default code contains the CSS values that will appear on an E-reader when none of the media queries match that particular device.

8.1.4 Media Query Guideline #4: Media Queries Should Appear After Non-Media Query Code

Since CSS is applied in the order that it appears, code that targets multiple devices (such as the `device-aspect-ratio` code that targets all Fire tablets) should appear after any non-media query code.

In the following example, the default code creates a black border on every device for any element that uses the `blue_background` class. The media queries that follow it remove the border and display a blue background on Fire tablets and iPad for any element that uses the `blue_background` class. All other devices will only display the black border.

Example:

```
/* Default Formatting. Use this for Kindle e-Ink. No media queries required. */
.blue_background {
   border: 1px solid black;
  }

/* Kindle Fire (All) Formatting. Use this to target all Kindle Fires. */
@media amzn-kf8 and (device-aspect-ratio:1280/800) {
      .blue_background {
         background-color: blue;
         border: none;
      }
   }

/* iPad (3, Air, Mini) Formatting. Use this for any iPad. */
@media (device-width: 768px) {
      .blue_background {
         background-color: blue;
         border: none;
      }
```

```
    }
```

In the example above, the black border defined in the default code for the `blue_background` class will still appear on Fire tablets if the `border` property is not overridden. Setting the `border` to `none` in the media queries for Fire tablets and iPad ensures that the default values for these properties are overridden. This is helpful if you are using non-media query code to target Kindle e-Ink devices and do not want to transfer a colored border to a Fire tablet.

8.1.5 Media Query Guideline #5: Avoid Duplicating Code

When writing media queries, only include the CSS classes and code that you need to change for that particular device. Any non-media query code that you use will automatically appear on all devices unless it is overwritten with a media query, so you do not need to repeat code that you want to apply to all devices.

In the following example, the goal is to to override a colored border on Fire tablets and replace it with a colored background, while keeping the text red for all devices. The example on the left is incorrect because repeating the .red_font class in the media query code is not necessary.

Example:

Incorrect Media Query	Correct Media Query
`/* Default formatting. */`	`/* Default formatting. */`
`.blue_background {`	`.blue_background {`
`   border: 1px solid blue;`	`   border: 1px solid blue;`
`  }`	`}`
`.red_font {`	`.red_font {`
`   color: red;`	`   color: red;`
`}`	`}`
`/* Kindle Fire (All) Formatting */`	`/* Kindle Fire (All) Formatting */`
`@media amzn-kf8 and (device-aspect-ratio:1280/800) {`	`@media amzn-kf8 and (device-aspect-ratio:1280/800) {`
`      .blue_background {`	`      .blue_background {`
`         background-color: blue;`	`         background-color: blue;`
`         border: none;`	`         border: none;`
`        }`	`      }`
	`   }`
`      .red_font {`	
`         color: red;`	

} }	

8.2 Using Media Queries

The following table outlines examples of supported media queries and the CSS applied to KF8, Mobi, and other readers:

Media Queries in CSS	CSS Applied to KF8	CSS Applied to Mobi	CSS Applied to Other Readers

@media amzn-mobi
{
.class1
{
font=size:3em;
font-weight: bold;
}
}
	-	font-size:3em;
		font-weight: bold;
			-

.class1
{
font-style: italic;
font-size:2em;
}
@media amzn-mobi
{
.class1
{
font-size:3em;
font-weight: bold;
}
}
	font-style: italic;
	font-size: 2em;
		font-style: italic;
		font-size: 3em;
		font-weight: bold;
			font-style: italic;
			font-size:2em;

@media amzn-mobi
{
.class1
{
	font-style: italic;
	font-size:2em;
		font-style: italic;	font-style: italic;
			font-size:2em;

Media Queries in CSS	CSS Applied to KF8	CSS Applied to Mobi	CSS Applied to Other Readers

font-size:3em !important;
font-weight: bold !important;
}
}
.class1
{
font-style: italic;
font-size:2em;
}
		font-size:3em;
		font-weight: bold;	

@media not amzn-mobi
{
.firstletter
{
float: left;
font-size: 3em;
line-height: 1;
font-weight: bold;
padding-right: .2em;
margin: 10px
}
}
@media amzn-mobi
{
.firstletter {
font-size: 3em;
}
}
	.firstletter
	{
	float: left;
	font-size: 3em;
	line-height: 1;
	font-weight: bold;
	padding-right: .2em;
	margin: 10px
	}
		firstletter
		{
		font-size: 3em;
		}
			.firstletter
			{
			float: left;
			font-size: 3em;
			line-height: 1;
			font-weight: bold;
			padding-right: .2em;
			margin: 10px
			}
			}

@media amzn-kf8	p {		

Media Queries in CSS	CSS Applied to KF8	CSS Applied to Mobi	CSS Applied to Other Readers

{
p {
color: red;
}
}
	color: red;
	}		

8.3 Using Media Queries for Backward Compatibility With Mobi

Media queries allow one CSS file to supply complex CSS for KF8 and basic CSS for the Mobi format. Some guidelines:

- Complex CSS can be overridden for the Mobi format by redefining the same class inside the `@media amzn-mobi` media query.
- Per the W3C standard, media queries should either be:
  - Individual queries specified after the common CSS; or

    Example:

    ```
    class1 {font-size: 2em;}
    @media amzn-mobi {.class1 {font-size: 3em;}}
    ```

  - Include `!important` with each property to enforce precedence.

    Example:

    ```
    @media amzn-mobi {.class1 {font-size: 3em !important;}}
    .class1 {font-size: 2em;}
    ```

CSS	CSS Styles Applied to Mobi	CSS Styles Applied to KF8

p
{
font-style: normal;
}
 	
h
{
font-weight: bold;
}
 	
div.example {
margin: 10px
}
	p
	{
	font-style: normal;
	}
	
	h
	{
	font-weight: bold;
	}
	
	div.example {
	margin: 10px
	}
		p
		{
		font-style: normal;
		}
		
		h
		{
		font-weight: bold;
		}
		
		div.example {
		margin: 10px
		}

CSS	CSS Styles Applied to Mobi	CSS Styles Applied to KF8

ul {
  margin: 20px
  padding-left: 30px;
}
	ul {
	  margin: 20px
	  padding-left: 30px;
	}
		ul {
		  margin: 20px
		  padding-left: 30px;
		}

.firstletter {
    float: left;
    font-size: 3em;
    line-height: 1;
    font-weight: bold;
    padding-right: .2em;
}
	.firstletter {
	    float: 0;
	    font-size: 3em;
	    line-height: 0;
	    font-weight: bold;
	    padding-right: 0;
	)
		.firstletter {
		    float: left;
		    font-size: 3em;
		    line-height: 1;
		    font-weight: bold;
		    padding-right: .2em;
		}

@media amzn-mobi
{
.firstletter {
    float: 0;
    font-size: 3em;
    line-height: 0;
    font-weight: bold;
    padding-right: 0;
}
}		

8.4 Submitting a Media Query

There are four options for submitting media queries:

- One CSS file;
- Different CSS files;
- Style tags; and
- @import.

8.4.1 Option 1: Using One CSS File.

Media queries can specify different CSS for Mobi and KF8 formats in the same CSS file. In the example below, a different **.class1** class is specified for the Mobi format than for the other formats in the same CSS file.

Example:

```
.class1

{

   font-style: italic;

   font-size:2em;

}


@media amzn-mobi

{

.class1

{

    font-size:3em;

    font-weight: bold;

}

}
```

8.4.2 Option 2: Using Different CSS Files

Media queries can specify different CSS for Mobi and KF8 formats in different CSS files. In the example below, the Mobi and KF8 formats utilize different CSS style sheets and the common CSS styles apply to all media.

Example:

```
<link href="common.css" rel="stylesheet" type="text/css">

<link href="kf8.css" media="amzn-kf8" rel="stylesheet" type="text/css">

<link href="mobi.css" media="amzn-mobi" rel="stylesheet" type="text/css">
```

8.4.3 Option 3: Using Style tags

Media queries can specify different CSS for Mobi and KF8 formats directly using `<style>` tags.

Example:

```
<style type="text/css">

<style type="text/css" media="amzn-kf8">

<style type="text/css" media="amzn-mobi">
```

8.4.4 Option 4: Using @import

Media queries can specify different CSS for Mobi and KF8 formats directly using `@import` to include different CSS files.

Example:

```
@import
```

```
@import url(common.css);
@import url(kf8.css) amzn-kf8;
@import url(mobi7.css) amzn-mobi;
```

8.5 Using the display:none Property with Media Queries

To specify different CSS for the content in Mobi 7 and KF8 format, use the `display:none` property with media queries. Support for the `display:none` property in the Mobi 7 format is available in Kindlegen 2.4 and later versions.

Example:

```
.defaultcontent
{ display: block; }

.mobicontent
{ display: none; }

@media amzn-mobi
{
   .defaultcontent
   { display: none; }

   .mobicontent
   { display: block; }
}
```

8.5.1 Using the display:none Property with Complex Tables

Tables have extensive support in KF8, but complex tables do not render well in Mobi 7. With the `display:none` property, you can use an HTML-based table for the KF8 content and an image-based table for Mobi 7, as shown in the example below.

Example:

```
.defaultcontent
{ display: block; }

.mobicontent
{ display: none; }

@media amzn-mobi
{
   .defaultcontent
   { display: none; }
   .mobicontent
   { display: block; }
}

<table class="defaultcontent" bordercolor="#E66C2C" border="1" cellpadding="4">
  <tr>
    <th>Heading</th>
    <th>Heading</th>
    <th>Heading</th>
  </tr>
  <tr>
    <td>Cell</td>
    <td>
      <table bordercolor="#003399" border="1" cellpadding="4">
        <tr>
          <td>Nested</td>
          <td>Nested</td>
        </tr>
        <tr>
          <td>Nested</td>
          <td>Nested</td>
        </tr>
      </table>
    </td>
    <td>Cell</td>
  </tr>
</table>
<img class="mobicontent" src="tableimage.jpg"></img>
```

8.5.2 Using the display:none Property with SVG Images

The SVG image format is supported in KF8, but not in Mobi 7. With the `display:none` property, you can use an SVG image for the KF8 content and a JPEG image for the Mobi 7 content, as shown in the example below.

Example:

```
.defaultcontent
{ display: block; }
```

```
.mobicontent
{ display: none; }

@media amzn-mobi
{
   .defaultcontent
   { display: none; }

   .mobicontent
   { display: block; }
}

<svg class="defaultcontent" xmlns="http://www.w3.org/2000/svg" version="1.1">
  <circle cx="100" cy="50" r="40" stroke="black" fill="red" />
</svg>
<img class="mobicontent" src="circleimage.jpg"></img>
```

8.5.3 Limitation on Using the display:none Property

Kindle limits usage of the `display:none` property for content blocks beyond 10000 characters. If the `display:none` property is applied to a content block that is bigger than 10000 characters, Kindlegen returns an error.

9 Kindle Best Practices

9.1 Testing Kindle Books

There are three ways to test your Kindle book before adding it to the Kindle store:

1. **Use the Kindle Previewer.** You can test your EPUB file using the Kindle Previewer software, available for both Windows and Mac OS X. The Kindle Previewer allows you to select views that represent the different devices including Kindle e Ink, Fire tablet, Kindle for PC, and Kindle for IOS. For installation instructions, see section 2.2.2, Kindle Previewer Software.
2. **Use Kindle devices and Kindle applications.** You can test KF8 content on a Kindle e Ink device or a Fire tablet.
3. **Use KDP.** The Kindle Direct Publishing Platform accepts a variety of book formats and provides preview capability on the website. To learn more or sign up, visit http://kdp.amazon.com.

Consider device compatibility. Keep in mind that users may wish to read your content on an extremely wide variety of devices, with very small or large screens and low or high resolution. Try to test your content on as diverse a selection of devices as possible, especially for complex ebooks such as fixed-layout children’s books.

Once you can read your book, use this checklist to confirm that your Kindle book does not contain blatant errors. (For a finer level of quality assurance, check against the complete formatting guidelines in section 3, General Formatting Guidelines):

1. Open the book for the first time or go to the cover page.

- o **Cover:** The Kindle book should have a cover.
- o **Single Cover:** From the cover, flip to the next page. There should not be another image of the cover page. For exceptions, see section 3.2.3 Cover Image Guideline #3: Internal Cover Must Not Appear Twice.

2. Go to the table of contents.
   - o In the table of contents, each item should be clickable and should link to the correct location in the book. There should be no page numbers in the TOC.
3. Go to any location in the book (reflowable ebooks only).
   - o **Font size:** Change the font size in the Kindle menu; the book font should change accordingly. Regular text should not be bold or italicized, and its alignment should not be forced.
   - o **Typeface:** Change the typeface in the Kindle menu; the book font should change accordingly. If you have designed your book to use only a specific font file, please make sure that you have followed guidelines in section 3.1.9 Text Guideline #9: Customizing Font Selection . Not following these guidelines could lead to the Kindle settings reverting to the customer's preferred reading font.
4. Go back to the first page and flip through every page of the book.
   - o **Images:** Images should not be too small. Make sure that all text in images is legible. Large pictures should be scaled to fit the page and display in their entirety on one screen.
   - o **Tables:** Tables should appear correctly. Make sure that all text in tables is legible.
   - o **Page numbers:** There should not be any references to page numbers in the book, including in the cross-references, TOC, and index.
   - o **Material only included with physical book:** There should not be any references to material (such as a CD or DVD) that is only included with the physical book.
   - o **Background settings (reflowable ebooks only):** On a Kindle tablet device or Previewer, confirm that your text is legible in all background color modes (white, black, and sepia).
   - o **Magnification (fixed-layout only):** Activate popups/panel view and check that all text content and/or panels have corresponding magnification, no content is overflowing the edge of the screen, and magnified reading order is correct.

10 Kindle Quality Guidelines

Amazon strongly recommends that you verify your exported content before converting it into a Kindle book because some content creation tools format content differently when exported to HTML.

In addition, Amazon encourages you to review the entire book for:

- missing content;
- wrong content;
- typos and complete character support;
- alignment errors;
- forced typeface throughout the entire book (reflowable ebooks) or correct font (fixed-layout ebooks);
- proper paragraph spacing and indenting; and
- forced font color or background color.

These errors negatively affect readability and may require the Amazon team to suppress the title to protect the reader’s experience.

11 Appendices

11.1 Appendix A: HTML Tags Supported in Kindle Format 8

HTML Tag	Description	Supported on KF8-Enabled Devices & Apps	Notes
<!--...-->	Specifies a comment	Yes	
<!DOCTYPE>	Specifies the document type	Yes	Not on e Ink
<?xml?>	This tag identifies a document as an XML document	Yes	
<a>	Specifies a hyperlink	Yes	
<address>	Specifies an address element	Yes	
<article>	Specifies an article	Yes	
<aside>	Specifies content aside from the page content	Yes	
<b>	Specifies bold text	Yes	
<big>	Makes the enclosed text one font size larger than the current or default font size	Yes	Deprecated tag – Recommend using CSS instead
<blockquote>	Specifies a long quotation	Yes	
<body>	Specifies the body element	Yes	
<br>	Inserts a single line break	Yes	
<caption>	Specifies a table caption	Yes	
<center>	Centers text horizontally	Yes	Deprecated tag – Recommend using CSS style text-align:center instead
<cite>	Specifies a citation	Yes	
<code>	Specifies computer code text	Yes	
<col>	Specifies attributes for table columns	Yes	
<dd>	Specifies a definition description	Yes	
<del>	Specifies deleted text	Yes	
<dfn>	Defines a definition term	Yes	
<div>	Specifies a section in a document	Yes	
<dl>	Specifies a definition list	Yes	

HTML Tag	Description	Supported on KF8-Enabled Devices & Apps	Notes
`<dt>`	Specifies a definition term	Yes	
`<em>`	Specifies emphasized text	Yes	
`<font>`	Alters the font appearance of the text it encloses	Yes	Deprecated tag – Recommend using CSS instead
`<figcaption>`	Specifies caption for the figure element.	Yes	
`<figure>`	Specifies a group of media content, and its caption	Yes	
`<footer>`	Specifies a footer for a section or page	Yes	
`<h1>`	Specifies a heading level 1	Yes	
`<h2>`	Specifies a heading level 2	Yes	
`<h3>`	Specifies a heading level 3	Yes	
`<h4>`	Specifies a heading level 4	Yes	
`<h5>`	Specifies a heading level 5	Yes	
`<h6>`	Specifies a heading level 6	Yes	
`<head>`	Specifies information about the document	Yes	
`<header>`	Specifies a group of introductory or navigational aids, including hgroup elements	Yes	
`<hgroup>`	Specifies a header for a section or page	Yes	
`<hr>`	Specifies a horizontal rule	Yes	
`<html>`	Specifies an html document	Yes	
`<i>`	Specifies italic text	Yes	
`<img>`	Specifies an image	Yes	
`<ins>`	Specifies inserted text	Yes	
`<kbd>`	Specifies keyboard text	Yes	
`<li>`	Specifies a list item	Yes	
`<link>`	Specifies a resource reference	Yes	
`<mark>`	Specifies marked text	Yes	

HTML Tag	Description	Supported on KF8-Enabled Devices & Apps	Notes
<menu>	Specifies a menu list	Yes	
<ol>	Specifies an ordered list	Yes	
<output>	Specifies some types of output	Yes	
<p>	Specifies a paragraph	Yes	
<pre>	Specifies preformatted text	Yes	
<q>	Specifies a short quotation	Yes	
<rp>	Used for the benefit of browsers that don't support ruby annotations	Yes	
<rt>	Specifies the ruby text component of a ruby annotation.	Yes	
<samp>	Specifies sample computer code	Yes	
<section>	Specifies a section	Yes	
<small>	Specifies small text	Yes	
<source>	Specifies media resources	Yes	
<span>	Specifies a section in a document	Yes	
<strong>	Specifies strong text	Yes	
<style>	Specifies a style definition	Yes	
<strike>	Create a strikethrough text	Yes	
<sub>	Specifies subscripted text	Yes	
<sup>	Specifies superscripted text	Yes	
<table>	Specifies a table	Yes	Use for tabular data only
<tbody>	Specifies a table body	Yes	
<td>	Specifies a table cell	Yes	
<tfoot>	Specifies a table footer	Yes	
<th>	Specifies a table header	Yes	
<thead>	Specifies a table header	Yes	
<time>	Specifies a date/time	Yes	
<title>	Specifies the document title	Yes	
<tr>	Specifies a table row	Yes	

HTML Tag	Description	Supported on KF8-Enabled Devices & Apps	Notes
`<u>`	Underlines any text it encloses	Yes	
`<ul>`	Specifies an unordered list	Yes	
`<var>`	Specifies a variable	Yes	
`<wbr>`	Specifies a line break *opportunity* for very long words and strings of text with no spaces.	Yes	
`<nav>`	Specifies navigation links	Yes	
`<summary>`	Specifies a summary/caption for the <details> element	Yes	
`<video>`	Specifies a video	No	
`<audio>`	Specified an audio content	No	

*Partial support (see *http://www.mobipocket.com/dev/article.asp?BaseFolder=prcgen&File=TagRef_OEB.htm*)

The following HTML tags are not supported in the Kindle format:

- Canvas
- Command
- Datalist
- Script (reserved for Amazon use only)
- Base
- Form
- Eventsource
- KeyGen
- Input
- Embed (Only SVG is supported)
- Object (Only SVG is supported)
- Param
- Noscript
- IFrame
- Marquee

11.2 Appendix B: CSS Selectors, Attributes, and Properties Supported in Kindle Format 8

CSS Attribute	Supported on KF8-Enabled Devices & Apps	Notes
`/*Comment*/`	Yes	CSS comment
`@import`	Yes	Import external style sheets
`@charset`	Yes	Declares character encoding
`@font-face`	Yes	Allows for linking to fonts
`*`	Yes	Selects all elements
`E`	Yes	Matches any E element (div, span, p)
`E.class`	Yes	Class selector
`E#id`	Yes	ID selector
`E:link`	Yes	Link selector (not yet visited)
`E:visited`	No	Link selector (visited)
`Margin`	Yes	Sets margin properties
`Padding`	Yes	Sets padding properties
`Width`	Yes	Sets width of an element
`Height`	Yes	Sets height of an element
`Float`	Yes	Specifies if a box should float on the side
`Clear`	Yes	Specifies which side of an element where other floating elements are not allowed
`Display`	Yes	Specifies the type of box an element should generate
`min-width`	Yes	Sets minimum width of an element
`max-width`	No	Sets maximum width of an element
`min-height`	Yes	Sets minimum height of an element
`max-height`	No	Sets maximum height of an element
`Clip`	Yes	Clips an absolutely positioned element
`Visibility`	Yes	Specifies whether or not an element is visible
`Border`	Yes	Sets all border properties
`border-color`	Yes	Sets the colors of all four borders
`border-style`	Yes	Sets the style of all four borders

CSS Attribute	Supported on KF8-Enabled Devices & Apps	Notes
`border-width`	Yes	Sets the width of all four borders
`border-top`	Yes	Sets the top border properties
`border-right`	Yes	Sets the right border properties
`border-bottom`	Yes	Sets the bottom border properties
`border-left`	Yes	Sets the left border properties
`border-radius`	Yes	Sets the radius for rounded corner in borders
`line-height`	Yes	Sets the vertical space between baselines
`vertical-align`	Yes	Sets vertical alignment
`Position`	Yes	Sets type of positioning (static, relative, absolute). Not recommended for use in reflowable books.
`Top`	Yes	Sets the top margin edge for a position box
`Right`	Yes	Sets the right margin edge for a position box
`Bottom`	Yes	Sets the bottom margin edge for a position box
`Left`	Yes	Sets the left margin edge for a position box
`z-index`	Yes	Sets the stack order of an element
`list-style`	Yes	Sets the properties of a list
`list-style-image`	Yes	Specifies an image as the list-item marker
`list-style-position`	Yes	Specifies where to place the list item market
`list-style-type`	Yes	Specifies the type of list item marker
`Opacity`	Yes	Sets the transparency of an element
`Background`	Yes	Sets the background property
`background-attachment`	Yes	Sets whether a background image is fixed or scrolls with the rest of the page
`background-color`	Yes	Sets the background color of an element
`background-image`	Yes	Sets the background image of an element

CSS Attribute	Supported on KF8-Enabled Devices & Apps	Notes
background-position	Yes	Sets the starting position of a background image
background-repeat	Yes	Sets how a background image is repeated
background-clip	Yes	Specifies whether an element's background, either the color or image, extends underneath its border
background-origin	Yes	Determines the background positioning area
background-size	Yes	Specifies the size of the background images
Font	Yes	Sets all font properties
font-family	Yes	Allows for a prioritized list of font family names and/or generic family names to be specified for the selected element
font-size	Yes	Specifies the size of the font
font-style	Yes	Allows font style (italic or oblique) to be selected within a font-family
font-variant	Yes	Selects a normal, or small-caps face from a font family
font-weight	Yes	Specifies the weight or boldness of the font
text-align	Yes	Specifies the horizontal alignment of text
text-decoration	Yes	Specifies the decoration to be added to the text
text-indent	Yes	Specifies the indentation of the first line in a text block
text-transform	Yes	Controls the capitalization of the text
letter-spacing	Yes	Increases or decreases the space between characters in a text
word-spacing	Yes	Increases or decreases the space between words in a text
white-space	Yes	Specifies how white space inside an element is handled
text-shadow	Yes	Specifies the shadow effect added to text
text-overflow	Yes	Specifies whether an ellipsis displays when text content has overflowed its given layout area
word-wrap	Yes	Specifies whether or not the browser is allowed to break lines within words to prevent overflow when an otherwise unbreakable string is too long to fit

CSS Attribute	Supported on KF8-Enabled Devices & Apps	Notes
`Direction`	Yes	Sets the base text direction and block-level elements and the direction that cells flow within a table row
`border-collapse`	Yes	Selects the border model
`border-spacing`	Yes	Specifies the distance between the borders of adjacent cells
`caption-side`	Yes	Positions the content of table-caption at the specified side
`empty-cells`	Yes	Specifies how to render borders and backgrounds around cells that have no visible content.
`Outline`	No	Sets the outline properties
`outline-color`	No	Sets the color of an outline
`outline-style`	No	Sets the style of an outline
`outline-width`	No	Sets the width of an outline
`outline-offset`	Yes	Sets the space between an outline and the edge or border of an element
`Width`	Yes	Specifies the width of the content area of an element
`Height`	Yes	Specifies the height of the content area of an element
`device-width`	Yes	The width of the screen in CSS pixels at zoom factor 1.0
`device-height`	Yes	The height of the screen in CSS pixels at zoom factor 1.0
`device-aspect-ratio`	Yes	Describes the aspect ratio of the output device
`Color`	Yes	Sets the color of text
`color-index`	Yes	Describes the number of entries in the color lookup table of the output device
`Monochrome`	Yes	Describes the number of bits per pixel in a monochrome frame buffer

The following CSS selectors, attributes, and properties are not supported in the Kindle format:

- E + F (Direct adjacent)
- E ~ F (Indirect adjacent)
- E: first-child
- E: first-of-type

- E: last-child
- E: last-of-type
- E: only-child
- E: only-of-type
- E: nth-child
- E: nth-last-child
- E: nth-of-type
- E: nth-last-of-type
- E: first-letter
- E: first-line
- E: before
- E: after
- E::before
- E::after
- Counter-increment
- Counter-reset

11.3 Appendix C: Guidelines for Converting XMDF to KF8

11.3.1 Kindlegen Command

Kindlegen accepts the folder containing the XMDF source file as input. Use the command:

```
kindlegen <folder name>
```

You can use an additional command line option (`-intermediate_only`) to generate intermediate OPF/HTML files:

```
kindlegen -intermediate_only <folder name>
```

This option generates intermediate files as OPF/HTML files in a new folder next to the input folder. Kindlegen names this folder with the input folder name followed by **_dump**. To change anything in the intermediate files, use these intermediate HTML or OPF files.

The OPF file is named **current_content.opf** and can be found at the same location as the **main.xml** file.

Use the following command to generate the KF8 from OPF/HTML files:

```
kindlegen <OPF File>
```

11.3.2 Source Issues

An XMDF source can have multiple issues that degrade the reading experience on Kindle. You can correct these issues to improve the reading experience. The following sections list a few of the top source issues found in our testing,

11.3.2.1 Source Issue #1—Poor Image Quality

Bad quality images will result in the cover or other image being displayed too small. To avoid this, provide good quality images. For quality requirements, see section 3.2 Cover Image Guidelines and section 3.6 Image Guidelines.

11.3.2.2 Source Issue #2—Blurred Gaiji characters

Replace Gaiji characters with corresponding code characters or provide high quality images of at least 64 x 64 to avoid blurring.

Requirements for Gaiji image files:

- Image format: PNG (8-bit) format or JPEG format (8-bit transparent image recommended)
- Size: 128 x 128 pixels or greater is recommended

11.3.2.3 Source Issue #3—TOC Entries Hanging Style

Use the proper style of positive margin and negative indent to create TOC text with the proper indentation.

Correct:

```
<p top_line_indent = "-1em" top = "1em">

<char_id char_id = "CR0002">Part 1</char_id><br/>

<char_id char_id = "CR0004">Sub-Part 1</char_id><br/>

<char_id char_id = "CR0006">Sub-Part 2</char_id><br/>

</p>
```

Incorrect:

```
<char_id char_id = "CR0002">Part 1</char_id><br/>

<char_id char_id = "CR0004">Sub-Part 1</char_id><br/>
```

```
<char_id char_id = "CR0006">Sub-Part 2</char_id><br/>
```

11.3.2.4 Source Issue #4—TOC Entries Not Linked

All TOC items must be linked to the corresponding chapter.

11.3.2.5 Source Issue #5—Incorrect Number Orientation in TOC

Apply tate-chu-yoko style for TOC index numbers to avoid incorrect number orientation.

Correct:

```
<char_id char_id = "CR0020">

<yoko>10</yoko>

</char_id>

  CHAPTER X
```

Incorrect:

```
<char_id char_id = "CR0020">10</char_id>

  CHAPTER X
```

11.3.2.6 Source Issue #6—Bold Kanji Characters

Avoid bold style for Kanji characters. This sort of styling makes the characters look blurred.

Correct:

遺

Incorrect:

```
<font bold = "yes">遺</font>
```

11.3.2.7 Source Issue #7—Faded Text

Leave the text color unspecified. Using light colors results in faded text.

Some Kindle devices allow the reader to change the background color to black. If text is forced black, it will not be readable in this mode and the book will be suppressed.

11.3.2.8 Source Issue #8—No Space Between Images

Use line breaks (`<br/>`) to avoid images rendered without space.

Example:

```
<object type="image/png" src="image1.png"/>

<br/>

<object type="image/png" src="image2.png"/>
```

11.3.2.9 Source Issue #9—Images Not Shown In Separate Pages

To display images on separate pages, use separate chapters for each image.

11.3.2.10 Source Issue #10—TOC Not Shown

To ensure that the TOC is shown, include all of the important links in `<special_page_link>`.

Example:

```
<special_page_link>

<special_page title="Chapter 1">PG1111</special_page>

<special_page title="Chapter 2">PG1112</special_page>
```

```
...

</special_page_link>
```

11.3.2.11 Source Issue #11—Large Amount of Text Is Not Centered

Do not use the `valign="middle"` style for large amounts of text.

11.3.2.12 Source Issue #12—Duplicate IDs

Do not use the same Flow ID/Page ID mentioned in the source. Use unique ID names.

11.3.2.13 Source Issue #13—File Path and File Name Requirements

Do not use the backward slash (\) for specifying file path; always use the forward slash (/) instead. Do not include special characters (such as !, @, #, $) in the file path or file name.

11.3.3 Unsupported Features

Some XMDF features are not supported in Kindle. If the file has such features, Kindlegen displays an error message and fails the conversion. These are the unsupported features.

Serial No.	Feature	Tag	Example

1	Image animations	flip_animation	`<flip_animation renewal_time="500ms" >`
			`<flip_animation_source src="aaa9.jpg" type="image/jpeg"/>`
			`<flip_animation_source src="aaa2.jpg" type="image/jpeg"/>`
			`...`
			`</flip_animation>`

2	Comic books	comic_object_entry	`<parts_module>`
			`<object_table>`
			`...`
			`<comic_object_entry src="comic9.xml" type="application/x-bvf-comic" object_id="OB0001"/>`
			`</object_table>`
			`</parts_module>`

3	Sound media	sound_object_entry	`<parts_module>`
			`<object_table>`
			`...`
			`<sound_object_entry src="movie9.3g2" type="video/3gpp2" object_id="OBmv00"/>`
			`</object_table>`
			`</parts_module>`

4	Movie media	movie_object_entry	`<parts_module>`
			`<object_table>`
			`...`
			`<movie_object_entry src="movie9.3g2" type="video/3gpp2" object_id="OBmv00"/>`

Serial No.	Feature	Tag	Example
			</object_table> </parts_module>
5	Search pages	search_page_object_entry	<parts_module> <object_table> ... <search_page_object_entry src="spage9.xml" type="text/x-bvf-search-page" object_id="OBSP01" /> </object_table> </parts_module>
6	Clickable area in images	pointer_region	<event> <trigger> <trigger_pointer id="OB003k/CR0001" action_flag="click"> <pointer_region> <vertex position="(0,0)"/> <vertex position="(100,0)"/> <vertex position="(100,100)"/> <vertex position="(0,100)"/> </pointer_region> </trigger_pointer> </trigger> <action> <action_page_jump page_id="PG0043"/> </action> </event>
7	Trigger action pointing to a URL with ampersand HTML entity	action_page_jump	<event> <trigger> <trigger_pointer id="OB0006/CR0015" action_flag="click"/> </trigger> <action> <action_page_jump book="http://www.japanvisitor.com/index.php?cID=359&amp;pID=986" book_type="text/html"/> </action> </event>

11.3.3.1 Ignored Features

For some features that are not supported, Kindlegen does not error out. Instead, Kindlegen ignores them and proceeds with the conversion. These are the ignored features.

Serial No.	Feature	Tag/Attribute	Example
1	Pronunciation	Reading attribute	`<title reading="PI">π</title>`
2	Alternative code and set for Gaiji	Attributes alt_set and alt_code of tag external_char	`<external_char alt_set="sh_extchars" alt_code="0x2345" alt="間"/>`

3	Permission information	permission_info	`<permission_info>`
			`<print_permission permission="authorized"/>`
			`</permission_info>`

4	Line breaking method	line_breaking_method	`<line_breaking_method method="word_wrap">`

5	Play back	action_play	`<event>`
			`<trigger>`
			`<trigger_pointer id="OB0006/CR0015" action_flag="click"/>`
			`</trigger>`
			`<action>`
			`<action_play object_id="OBkj23"/>`
			`...`
			`</action>`
			`</event>`

6	Opacity for font, background and others	Opacity attribute	`<font color="#FF0000" opacity="100"/>`

7	Background music	text_default_background_music	`<text_default_attribute>`
			`<text_default_background_music src="9.mp3" type="application/x-smaf" loop="yes"/>`
			`...`
			`</text_default_attribute>`

8	Drop cap	drop_cap	`<p drop_cap="2">Alice was...</p>`

9	Scrolling text content	scrolling_text	`<scrolling_text>`
			`This text will be scrolling over and over`
			`</scrolling_text>`

10	Content masking	Mask	`<mask>42 </mask>`

11	Key entries for search	key_entry	`<key_entry>`
			`<key_item search_word="color"`

Serial No.	Feature	Tag/Attribute	Example

			table_id="ST0001">
			  Color
			  </key_item>
			  <key_item search_word="colour" table_id="ST0002">
			  Colour
			  </key_item>
			</key_entry>