Note Frame differences
- Blank Frame: solid line; empty bar
- Blank keyframe: Note the cell and solid bar with a hollow/empty circle
- Keyframe: When an object is inserted into the working area, a frame becomes a KEYFRAME
  Denoted by a black dot in the frame
Remember to select the frame where you wish to insert an object/drawing
If there are no frames, you must insert frame (F5/F6/F7)

Frame Rates (FPS)
- Default Flash movie is 12 frames per second. Recommended 25-29 FPS.
- Drop frames – stuttering effect that is due to processor that cannot handle the frame rate. Movie playback is dependent on the user’s computer processor
  20-24 work fine but no more than that!
- Elapse time: The time it takes to play a movie. Elapse time is important to synchronize sounds with animation
- If there are 24 frames of animation and FPS = 12, what is the total play time of the movie?

Note: You can change the size of the frame cells by clicking on the right corner of the timeline to access the drop down menu with additional configuration options.
Practice/Demo exercises

Ex 1. BLANK FRAMES VERSUS BLANK KEYFRAMES

Option 1 SELECT A FRAME ON THE TIMELINE and
PC Users - Right Mouse Click to view options available
Mac Users – Get a 2 button mouse or Control Click to view menu options

<table>
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<th>Option</th>
<th>Command</th>
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<tbody>
<tr>
<td>Create Motion Tween</td>
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<tr>
<td>Create Shape Tween</td>
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<tr>
<td>Insert Frame</td>
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<tr>
<td>Remove Frames</td>
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<td>Insert Keyframe</td>
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<tr>
<td>Insert Blank Keyframe</td>
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<td>Cut Frames</td>
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<tr>
<td>Copy Frames</td>
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<td>Paste Frames</td>
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<td>Select All Frames</td>
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<tr>
<td>Copy Motion</td>
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<tr>
<td>Copy Motion as ActionScript 3.0...</td>
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<tr>
<td>Paste Motion</td>
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<td>Paste Motion Special...</td>
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</table>

Practice: Working with Frames
1. Open a new document in Flash
2. Select Frame 1 and Insert 20 Frames
3. Select multiple frames by clicking, hold and dragging across the frame selection, and Remove Frames
4. Repeat the above using Clear frames
   (What is the difference between clear and remove frames)

Practice: Working with Frames
1. Open a new document in Flash
2. Click on Frame 1
3. Insert Blank Keyframes
4. Selecting and Delete/Clear Blank Keyframes

Option 2
1. Open a new document in Flash
2. Click on Frame 1
3. Click on Insert>Timeline>
   Frame – F5
   Keyframe – F6
   Blank Keyframe – F7
Ex 2. Creating Static Frames
1. Open a new document in Flash
2. Click Frame 1>Draw an object
3. Select Frame 20> Timeline>Frame
4. What do you notice?
5. Dragging the last bar icon increases static time of the movie

Ex 3. Creating Blank Keyframes
1. Open a new document in Flash
2. Create Keyframes (F6) by drawing an object on the stage
3. Select Frame 2>Insert Timeline>KeyFrame
4. Repeat for consecutive frames>What do you notice?

Ex 4. Creating Keyframes
1. Open a new document in Flash
2. Create Keyframes (F6) by drawing an object on the stage
3. Select Frame 2>Insert Timeline>KeyFrame
4. Repeat for consecutive frames>What do you notice?

Ex 5. Creating a Blinking Object (KeyFrame animation)
Demo File – FrameRate01.fla
1. Open a new document in Flash
2. Draw object on Frame 1
3. Insert Timeline>Keyframe(F6) until Frame 15
4. Click on even frames
5. And delete objects from those frames
6. Press Enter to play movie
7. Insert blank keyframe at end

To slow down blinking, and adjusting frame rates
Demo File – FrameRate02.fla
1. You can click Insert Timeline>frames
2. Select frame 1 and click Insert Timeline>frame (F5) this will stretch the timeline
3. If you want blank frame to be longer, do the same (F5)

To view loop playback within the document window:
> Control>Loop Playback

Review Questions
Using Keyframes vs Blank KeyFrames:
1. What is the difference between inserting a BLANK Keyframe VS Inserting a KeyFrame?
2. Why or when would you want to use Blank KF vs Keyframes?

Keyframe Demo (Working with Text)
DEMO FILE: KFWordDemo.fla
1. Type the following words “KEYFRAME DEMO” (left align)
2. Click Insert Timeline> keyframe (F6) till Frame 14
3. This will duplicate the word in each frame
4. Then go back to frame 1 and delete all letters except for “K”
5. Go to frame 2 and delete all letters except for “K” and “E”
6. Repeat process etc.

Reversing Frames
Demo File: ReverseFrames.fla
1. Draw object on Frame 1 (red ball)
2. Double click on object>Group it
3. Click Insert Timeline>KeyFrames (F6) on Frame 10; as you are inserting frames, reposition the object
4. Name the layer
5. Select all frames by clicking on the layer
6. Edit>copy frames
7. Select Frame 11>Insert Blank keyframe
8. Edit>paste frames on Frame 11
9. To create reverse animation, select Frame 11 (where you pasted), Shift + command (MAC) or Shift + Ctrl (PC) and drag across frames
10. Modify>Frames>Reverse

**Onion Skinning**
> Allows you to preview the before and after frame
> Can be used to place objects in a specific place

**Editing multiple frames**
Add a layer to the previous project (reverse frames)
1. Create a static layer
2. Select Frame 1
3. Click on the small icon next to the onion skinning called “edit multiple frames”
   **4. Click on working area/stage**
4. Select Edit>Select All
5. Resize grouped objects
6. Click enter to view playback

**Copying animation to another layer**
Duplicate animations on a layer to another layer:
1. Insert New Layer
2. Click on the layer to be copied>that selects all the frames in that layer
3. Click the ALT/Option key, position mouse over the frames to be copied>Click, hold and drag to the new layer>note the + sign> drag frames to the New Layer>Release mouse

**Quiz on Frames & Keyframes**
How would you perform the following modifications on frames or keyframes? Explain each process, include shortcut keys where applicable
1. Insert frames or keyframes
2. Select frames or keyframes
3. Delete frames or keyframes
4. Move frames or keyframes
5. Drag frames and keyframes to a new location on the same layer or on a different layer
6. Copy and paste frames and keyframes
7. Convert keyframes to frames
8. Extend the duration of a keyframe
9. Change the length of a tweened sequence
10. What is the difference between clear frames and remove frames