**Motion**

These exercises introduce the key concepts and principles of motion along with certain workflows. Motion is all about timing and spacing. Get your timing and spacing down and then focus on the details. Other concepts introduced are squash and stretch, motion arcs, slow-in slow-out anticipation, follow-through, overlap, etc. The more you practice these key principles the stronger of an animator you'll become. Remember, animation is a layered process - think, plan, block, review, iterate, and then polish.

**Blocking**

• The foundation of your animation (gives you a "planned out" basis for what your animation will look like)

• Keeps you from animating as you go (you'll lose your timing; however, spontaneity is nice

• Communicates your animation (is it clear? does it read? always have someone critique it)

• Saves time

• Helps you define arcs

• Full-body poses

**General Tips**

• Plan things out before you do anything

• Make sure your poses read clearly before adding more poses

• Work in "Stepped" mode

• Key ALL anims - don't have scattered frames

**Ball Tips**

• Pay attention to trajectory of squash

• Make sure you're splining (otherwise it's choppy)

• Don't forget to rotate your ball

• Don't forget the roll at the end

**Hot Keys**

z: Undo

 s: Keys the selected object at that point in time

w: Move Tool

r: Scale Tool

+: make the tool bigger

-: make the tool smaller

<: Traverses keys left on the timeline

>: Traverses keys right on the timeline

Shift+leftclick+hold on slider: Selects frame range

 Shift+ctrl+alt+rightclick-hold: Scale graph editor window

f: In graph editor it frames all keyframes on selected channels (or everything if no channels are selected)

**Bouncing Ball Obstacle Course**

1. Settings:
* Time Slider:

Playback speed: Real-time [24 fps]

* Animation:

Default in tangent: Clamped

Default out tangent: Stepped

1. Timeline:

Scrubbing: left-click and drag the mouse across the timeline.

Outmost numbers: start and end of animation.

Inner numbers: part of the animation that timeline shows.

Manipulate the grey bar under timeline by clicking on it.

1. Playback Controls:

Playback speed: Right click on time line: Real-time.

All other controls located on the right of the timeline play your animation.

1. Keyframes:

To set keyframe: select all controls of object you want to key and press s

To delete keyframe: select all controls that was keyed, left-click on the keyframe in timeline -> Delete

Shifting keys: On time slider shift-left-click-hold seletcting the keys you want to shift. The inner arrows move selected keys. The outer arrows scale the keys.

WARNING: When scaling keys make sure they are set to whole numbers. We never key on partial (i.e. 1.3, 25.31221) numbers.

To fix this: select the keyframe left-click -> Snap.

Autokey: automatically updates keys on the selected frames.

1. Channel Box:

Key an attribute: right-click on the attribute -> Key Selected.

Squash Stretch Attribute: +number vertical stretch. –number horizontal squash.

Make attribute non-keyable: right-click on the attribute -> Make Selected Nonkeyable.

Make attribute keyable: right-click on the attribute -> Make Selected Keyable.

1. Playblasting:
* Select Panels -> Orthographic -> “render\_cam”
* Select Show -> uncheck: NURBS Curves & grid.
* Click Resolution gate icon to turn it off.
* Select Window -> Playblast options

Show Ornaments: Turn this off.

Format: qt

Encoding: H.264.

Quality: 100.

Display Size: From Render Settings.

Scale: 0.5.

Save to File: Set this to a convenient place that is not your desktop.

* Shortcut to Playblast: right-click on the timeline and select Playblast.
1. Graph Editor:

Window -> Animation Editors -> Graph Editor

x-axis: frames

y-axis: attribute values

Press f key to see the whole graph.

alt+center-mouse-button: pan

alt+right-mouse-button: zoom

scroll-wheel: zoom

w: move tool (press shift to lock the move horizontally or vertically)

If the splined tangents overshoot in the animation “flatten” the tangents.

To move the handle of the tangent select the key and middle-click.

To edit each handle independently click break the tangents icon.

To unify the broken tangents click unify tangents icon.

To change the weights of tangents go to Curves -> Weighted Tangents then click on free tangent weights icon.