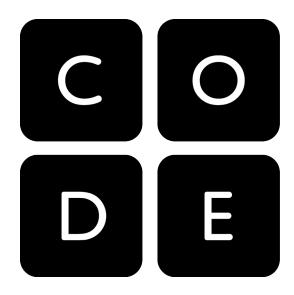
Name: \_\_\_\_\_ Course: \_\_\_\_



# CS in Algebra powered by Bootstrap

**Student Workbook** 

Name:	Date:	Per:
Reverse  Code.org CS in Algebra	e Engineerii	19 C O D E
Thing in the game	What changes about it?	More specifically

Name: _	Date:	Per:
	Video Game Planning	C O D E
	Code org CS in Algebra - Stage 1	

Use this form to plan out your video game. Once your game is complete, the player will move up and down, the target and danger will move from left and right, and you will earn points by touching the target and lose points by touching the danger.

### **Created by:**

### The game takes place in:

This will be the background image in your game

### The player is a:

The player moves up and down

#### The target is a:

The Target moves left and right

#### The danger is a:

The Danger moves left and right

Name		Date		l •
Fast	Functi	ons!		C O E
Code.org CS in A	Algebra - Stage 9			
	:		>	
name	dor	main		range
Example:	(	) =		
Example:				
Define:	(	) =		
 name	:	main		
				range
Example:	(	) =		
Example:	(	) =		
Define:	(	) =		
	:		->	
name	dor	main		range
Example:	(	) =		
Example:	(	) =		
Define:	(	) =		
 name	:	main	>	range
Example:	(	) =		
Example:	(	) =		
Define:	(	) =		

Name:	Date:	Per:

# The Design Recipe



Code.org CS in Algebra

### **Description**:

omain rang	 e
function do?	
tion	
) = what the function produce	 95
) = what the function produce	 'S
o all your input values	
	tion   ) =what the function produce  ) =what the function produce   what the function produce   o all your input values   > =

word probler rocket  Code.org CS in Algeb	-height	Per: C O D E
Write a function called of seconds that have	t blasts off, traveling at 15 ed 'rocket-height' that tak passed since the rocket of the rocket at that time	kes in the number took off, and which
Contract and	Purpose Statemer	nt
Every contract has three pa	erts	->
function name	domain	range
	what does the function do?	
Examples		
Write some examples for yo	our function in action	
Example: function name	() = input(s)	at the function produces
function name	() = input(s)	at the function produces
Definition		
Write the definition, giving	variable names to all your input v	'alues
Define:	( ) = ) =	

Name:		Date:_		Per: _	
	update	-target			O E
C	code.org CS in Algebra	- Stage 12			
<b>Directions</b> : Use the Design Recipe to write a function 'update-target' which takes in the target's x-coordinate and produces the next x-coordinate, which is 10 pixels to the right.					
Cont	ract and P	urpose Sta	atemer	nt	
Every cont	ract has three part.	S		->	
function	n name	domai	'n		range
		what does the fund	ction do?		
Exan	nples				
Write some	e examples for you	r function in action.			
Example: _	function name	(input(s)	_) =wha	t the function pr	roduces
Example: _	function name	(input(s)	_) = wha	t the function pr	roduces
Defir	nition				
Write the d	definition, giving va	riable names to all	your input ve	alues	

Define:

function name

Name:	Date:	Per:
word proble updat  Code.org CS in Alg	e-danger	C O D E
danger' which takes	Design Recipe to write a f s in the danger's x-coordin which is 10 pixels to the lef	nate and produces the
Contract and	l Purpose Stateme	nt
Every contract has three p	parts	->
function name	domain	range
	what does the function do?	
Examples		
Write some examples for	your function in action	
Example:	() = e	at the function produces
Example:	e input(s) =who	at the function produces
Definition		
Write the definition, giving	g variable names to all your input v	<i>ralues</i>
Define:	() =) =	

Name:	Date:	Per:
word proble		C O D E
Code.org CS in Alg	gebra - Stage 15	

**Description**: Write a function 'safe-left?', which takes in an x-coordinate and checks to see if it is greater than -25.

very cont	tract has three par	ts			
functio	: n name		dom	ain	> <i>range</i>
		wha	t does the fu	nction o	do?
Exar	nples				
/rite som	e examples for yo	ur fund	ction in actio	n	
xample: _	function name	_(	input(s)	)=_	what the function produces
xample: _	function name	_(	input(s)	)=	what the function produces
Defi	nition				
Vrite the	definition, giving v	variable	e names to a	ll your ii	nput values
efine:	function name	(		_)=	

Name:		Date:	Per:
	word problem safe-right?		C O D E
	Code.org CS in Algebra - Stage 15		

**Description**: Write a function 'safe-right?', which takes in an x-coordinate and checks to see if it is less than 425.

Cont	ract and F	Purpose State	ment
Every cont	tract has three par	ts	
function	:::::	domain	> range
		what does the function	do?
Exar	nples		
Write som	e examples for you	ur function in action	
Example: _	function name	_() =	what the function produces
Example: _	function name	_() =) =	what the function produces
Defi	nition		
Write the	definition, giving v	ariable names to all your	input values
Define:	function name	( ) = ) =	

Name:		Da	te:		Per:	
	word problem				C O E	
	Code.org CS in Algebr	a - Stage 15				
charact	<b>Description</b> : Write a function 'onscreen?', which takes in a character's x-coordinate and checks to see if it is safe on the left and on the right.					
Con	tract and F	Purpose S	Staten	nent		
Every con	tract has three par	ts		->		
functio	n name	do.	main		range	
		what does the	function de	0?		
Exar	nples					
Write son	ne examples for you	ır function in act	ion			
Example:	function name	(input(s)	) =	what the functi	on produces	
Example:	function name	(input(s)	) =	what the functi	on produces	
Defi	nition					
Write the	definition, giving v	ariable names to	all your in	out values		
Define: _	function name	variables	) =			

Name:	Date:	Per:
word problem  COST		C O D E
Code.org CS in Algebra	a - Stage 16	
Cheese (\$9.00), Chicken (\$11.	nired you as a programmer. They 25), and Broccoli (\$10.25). Write g and outputs the cost of a pizz	e a function called cost which
Contract and F	Purpose Statemer	nt
Every contract has three part		
function name	domain	range
	what does the function do?	
Examples		
Write some examples for you	r function in action	
Example:	() =	
Example:	() =	
Example:		
Example:	() =	
Definition		
Write the definition, giving va	ariable names to all your input va	alues
Define:( function name	) =) =)	

Name:		Date:		Per:
word problem update-p		yer		C O D E
<b>Directions</b> : Write a function called pressed and the player's y-coording	-			
Contract and Pur  Every contract has three parts	pos	e St	ateme	nt
,				
:::::		doma	nin	> range
who	at does	the fur	nction do?	
Examples				
Write some examples for your fur	nction ii	n action	7	
Example: <u>update-player</u> (	38	240	) =	240 + 10
Example: <u>update-player</u> (	40	240	) =	240 - 10
Example: <u>update-player</u> (	38	250	) =	
Example: <u>update-player</u> (	40	250	) =	
Definition				
Write the definition, giving variab	le name	es to all	your input	values
Define:((	variabi	les		
		<b>-</b>		

Name: Date:	Per:
-------------	------

## **Key Code Reference**

С	0
D	E

Code.org CS in Algebra - Stage 16

When you press a key on your keyboard, a unique numeric code is sent to your computer, which is then translated into a letter, number, or command. Use this handy key code reference sheet to make your Player sprite respond to different key presses.

Key	Code	Key	Code
left arrow	37	G	71
up arrow	38	Н	72
right arrow	39	I	73
down arrow	40	J	74
Ο	48	K	75
1	49	L	76
2	50	M	77
3	51	Ν	78
4	52	0	79
5	53	Р	80
6	54	Q	81
7	55	R	82
8	56	S	83
9	57	Т	84
Α	65	U	85
В	66	V	86
С	67	W	87
D	68	X	88
E	69	Y	89
F	70	Z	90

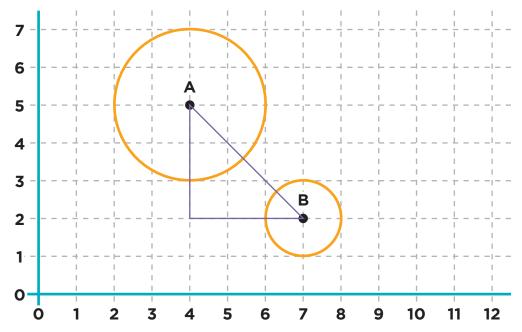
lame:	Date:	Per
Name:	Date	1 01.

### **Collision Detection**



Code.org CS in Algebra - Stage 19

### Graph #1



#### On the graph:

Label the right angle as C Label segment AB as c Label segment AC as b Label segment CB as a

- 1. What is the radius of circle A?
- 2. What is the radius of circle B?
- 3. What is Radius A + Radius B
- 4. Do the circles overlap? (true/false)
- 5. What is the length of side a?
- 6. What is the length of side b?
- 7. Estimate the length of side c?
- 8. What is  $a^2 + b^2$

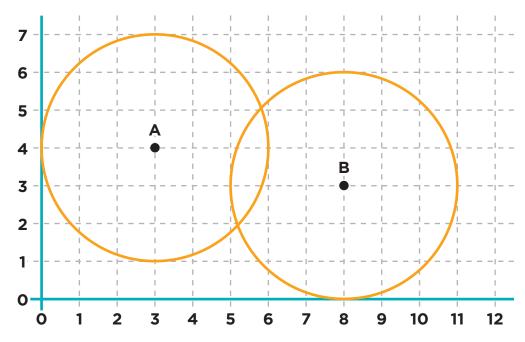
Name:	Date:	F
Tarric:	Date	

### **Collision Detection**



Code.org CS in Algebra - Stage 19

### Graph #2



#### On the graph:

Draw a segment from point A to point B

Label segment AB as c

Draw a right triangle using segment c as the hypotenuse.

Label the right angle as C Label segment AC as b Label segment CB as a

- 1. What is the radius of circle A?
- 2. What is the radius of circle B?
- 3. What is Radius A + Radius B
- 4. Do the circles overlap? (true/false)
- 5. What is the length of side a?
- 6. What is the length of side b?
- 7. Estimate the length of side c?
- 8. What is  $a^2 + b^2$

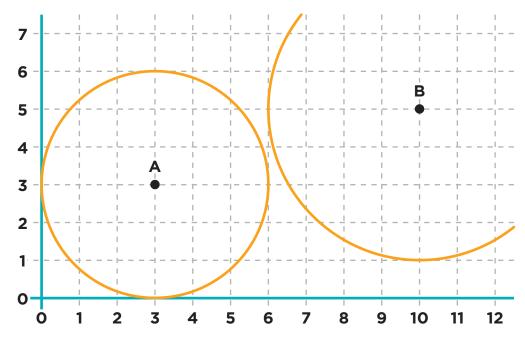
Name:	Date:	Per
1dille:	Date	1 01

### **Collision Detection**



Code.org CS in Algebra - Stage 19

### Graph #3



#### On the graph:

Draw a segment from point A to point B

Label segment AB as c

Draw a right triangle using segment c as the hypotenuse.

Label the right angle as C Label segment AC as b Label segment CB as a

- 1. What is the radius of circle A?
- 2. What is the radius of circle B?
- 3. What is Radius A + Radius B
- 4.Do the circles overlap? (true/false)
- 5. What is the length of side a?
- 6. What is the length of side b?
- 7. Estimate the length of side c?
- 8. What is  $a^2 + b^2$

Name:		Date	:	Per:	
	word problem line-leng  Code.org CS in Algebra - S			C O	
numbe		e difference	betw	ength', which takes in een them. It should a Iger one	
Con	itract and Pu	rpose St	tate	ment	
Every co.	ntract has three parts			->	
functi	ion name	dom	eain	rang	 7e
	И	hat does the fu	ınction d		
Exa	mples				
Write soi	me examples for your f	unction in actio	n		
Example	:line-length	10 5	)=_	10 - 5	
	function name	input(s)		what the function produc	es
Example	:	2 8 input(s)	)=_	8 - 2 what the function produc	·es
Def	inition				
Write the	e definition, giving varia	able names to a	ll your ii	nput values	
Define: _	function name	variables			

Name:		Date	) <u> </u>	Pe	er:
	word problen distance	e:e			C O D E
	Code.org CS in Algeb	ra - Stage 20			
• (	ons: Write a funct ox: The x-coordin oy: The y-coordin ox: The x-coordin oy: The y-coordin d use the Distanc	ate of the playe ate of the playe ate of another g ate of another g	r r Jame cha Jame cha	aracter aracter	en both points
Cor	tract and I	Purpose S	taten	nent	
Every co	ntract has three par :	ts		->	
functi	ion name	dom	rain		range
		what does the fu	inction de	o?	
Exa	mples				
Write so	me examples for yo	ur function in actic	יח		
Example	: function name	_(input(s)	) =	what the function	produces
Example	: function name	_(input(s)	)=	what the function	produces
Def	inition				
Write the	e definition, giving v	ariable names to a	ll your inp	out values	
Define: _	function name	( variables	_)=		

Name:		Date:	Per:	
word prob COllic			C	O E
Code.org CS in A	Algebra - Stage 20			
• px: The x-coc • py: The y-coc • cx: The x-coc • cy: The y-coc sthe player's x and	ordinate of the ordinate of the ordinate of and ordinate of and	player player other game ch other game ch	aracter	У
Contract an	d Purpos	se Stater	nent	
Every contract has thre	e parts			
function name		domain	<i>-</i> > <i>ra</i>	nge
	what doe	s the function a	10?	
Examples				
Write some examples for	or your function	in action		
Example:			what the function produ	ıces
Example:	nme inp	) = ut(s)	what the function produ	ıces
Definition				
Write the definition, giv	ving variable nam	nes to all your in	put values	
Define:	( e variab	) =		

Contract Log	Example									
	Range									
	Domain									
	Name									

Contract Log	Example									
	Range									
	Domain									
	Name									