Amanda Laucher
Neo Technology

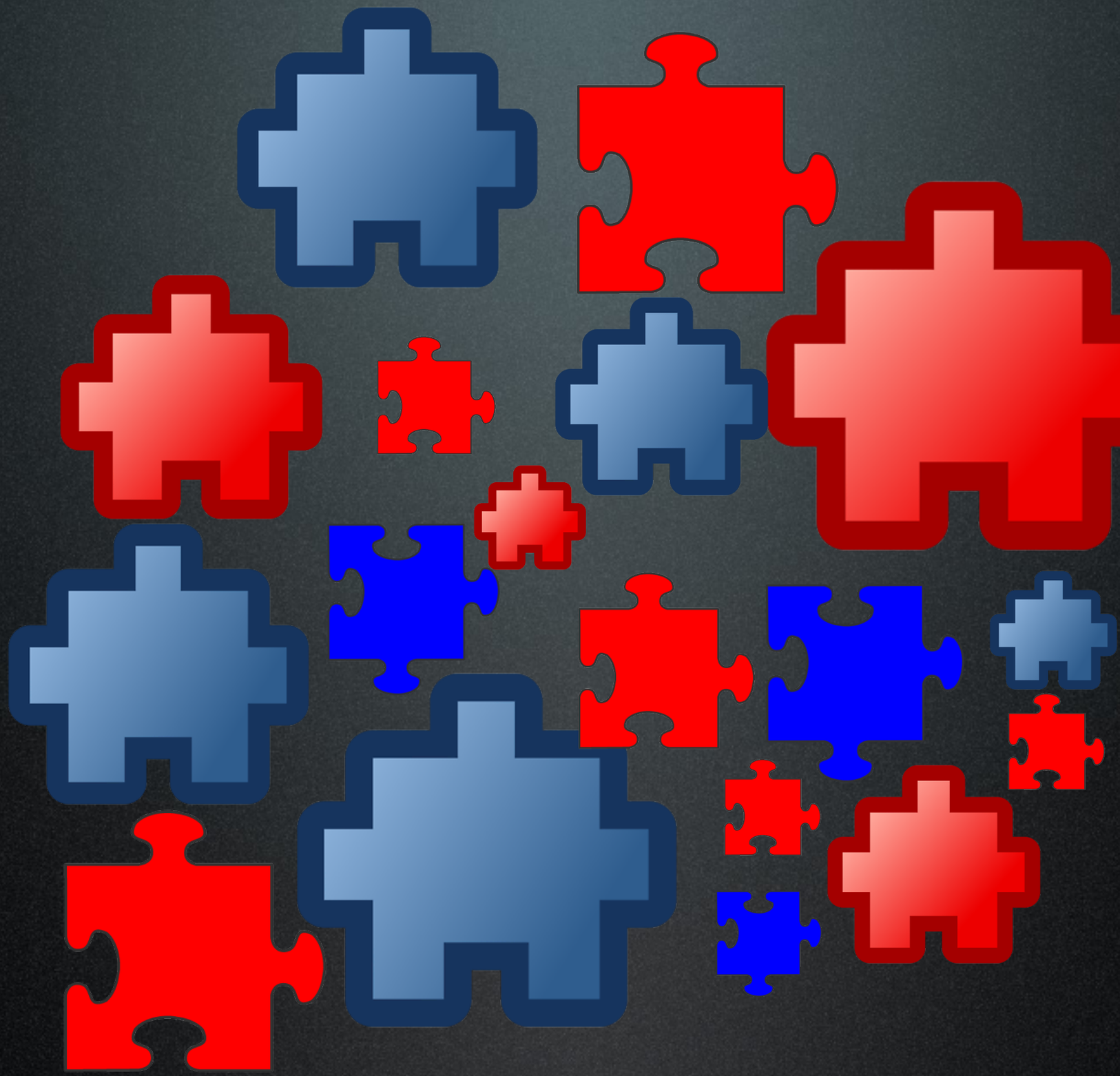
@pandamonial

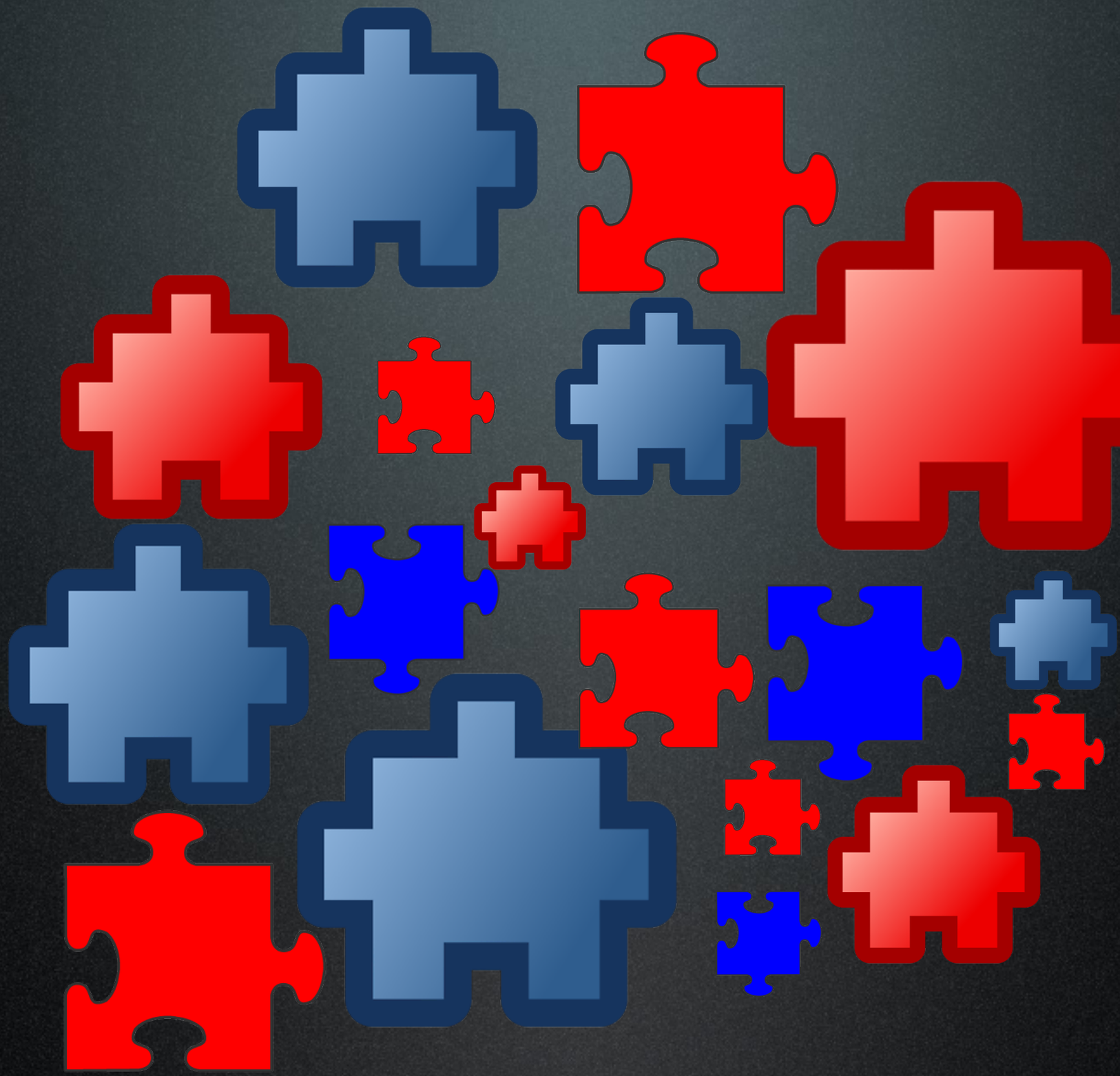
amanda@neotechnology.com

Databases are boring!

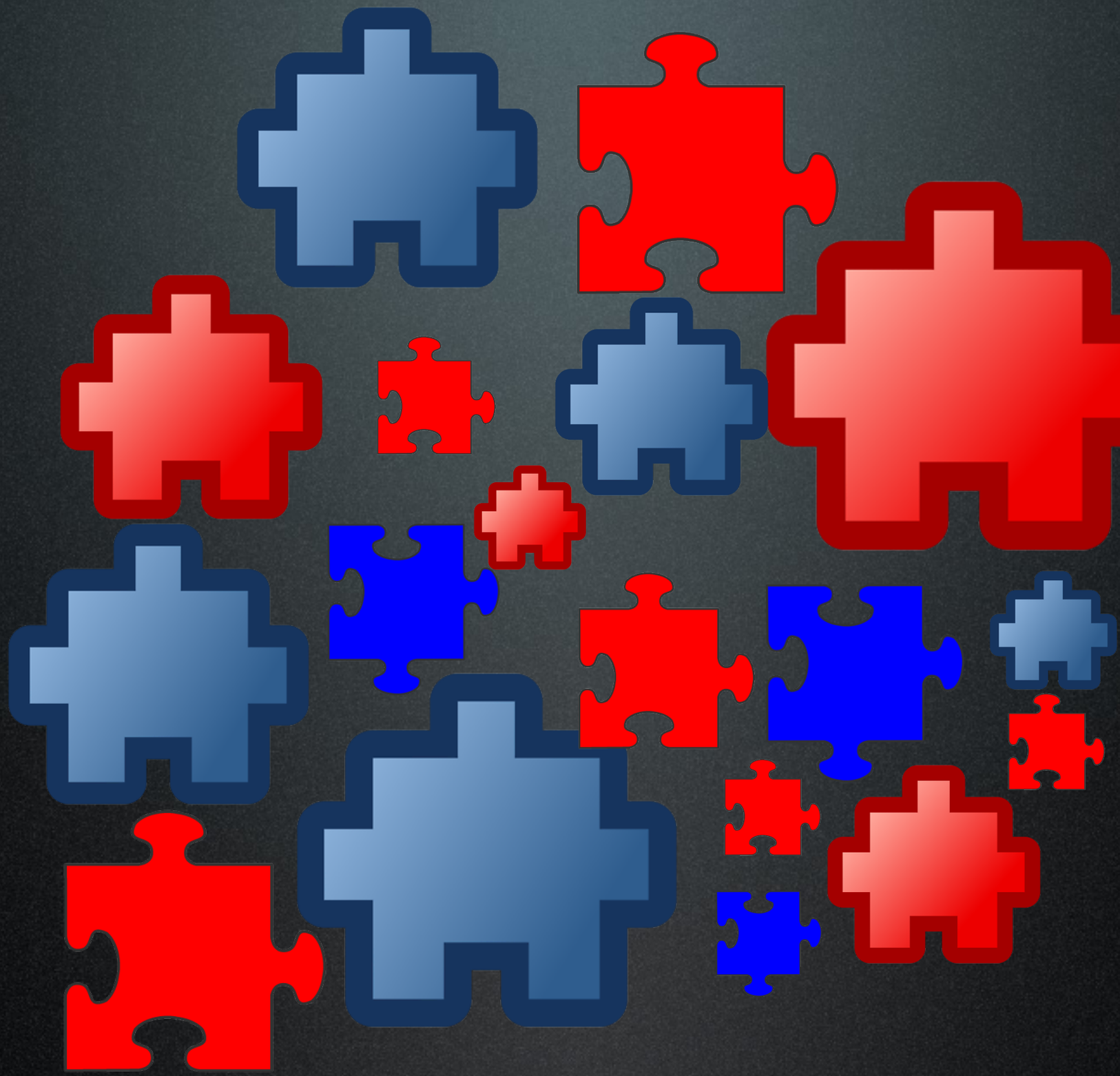
Amanda @pandamonial Laucher

What does a DB do for YOU





MySQL
It's a-me,
Mario!



Algorithms are...

Algorithms are AWESOME!

How writing applications works

Step 1:
Write some awesome algorithms

Step 2:
I put mock data into a data structure that is interesting to me

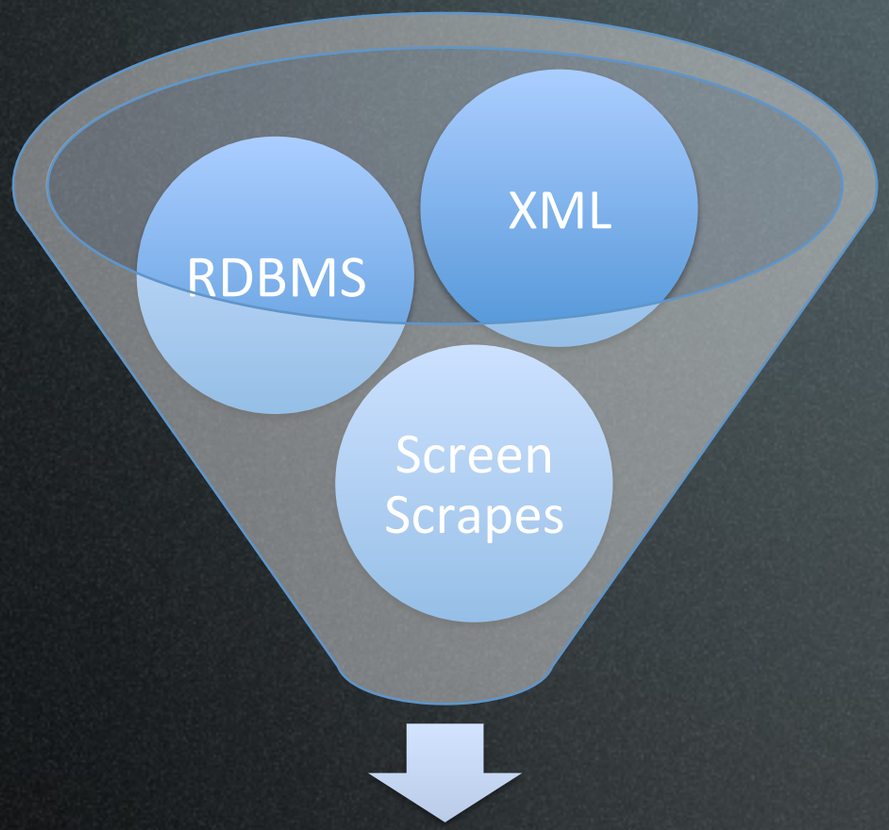
Step 3:
Draw up some fancy UI so end users are jolly and they keep paying me

Step 4:
Let some poor schmuck connect to the DBs and get the data in the format I need

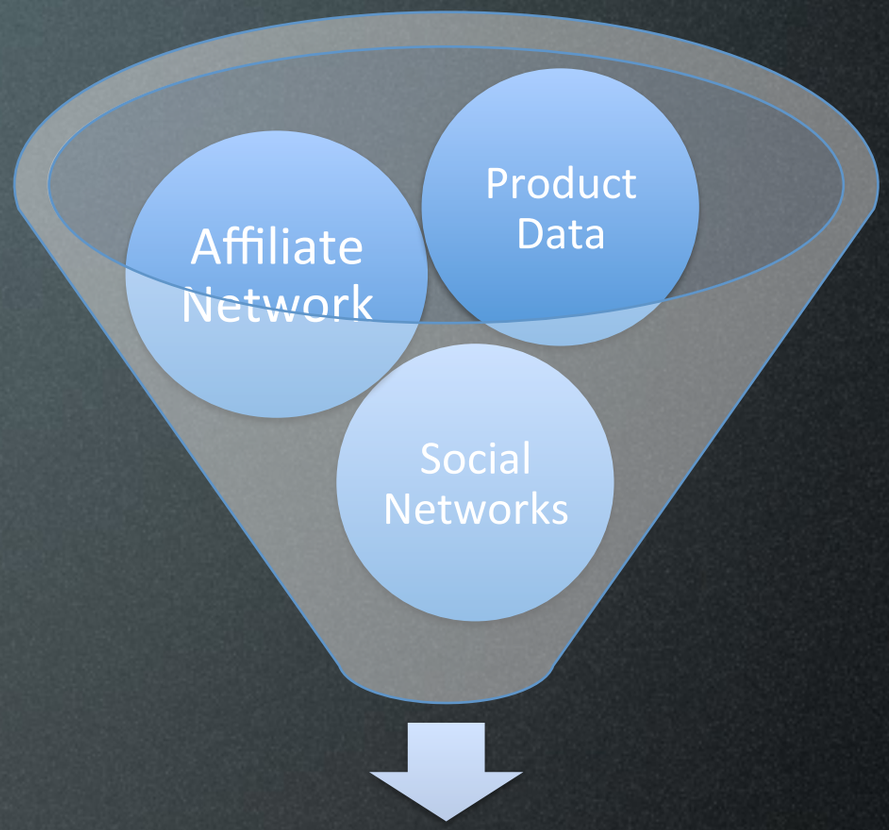
Step 5:

Profit!

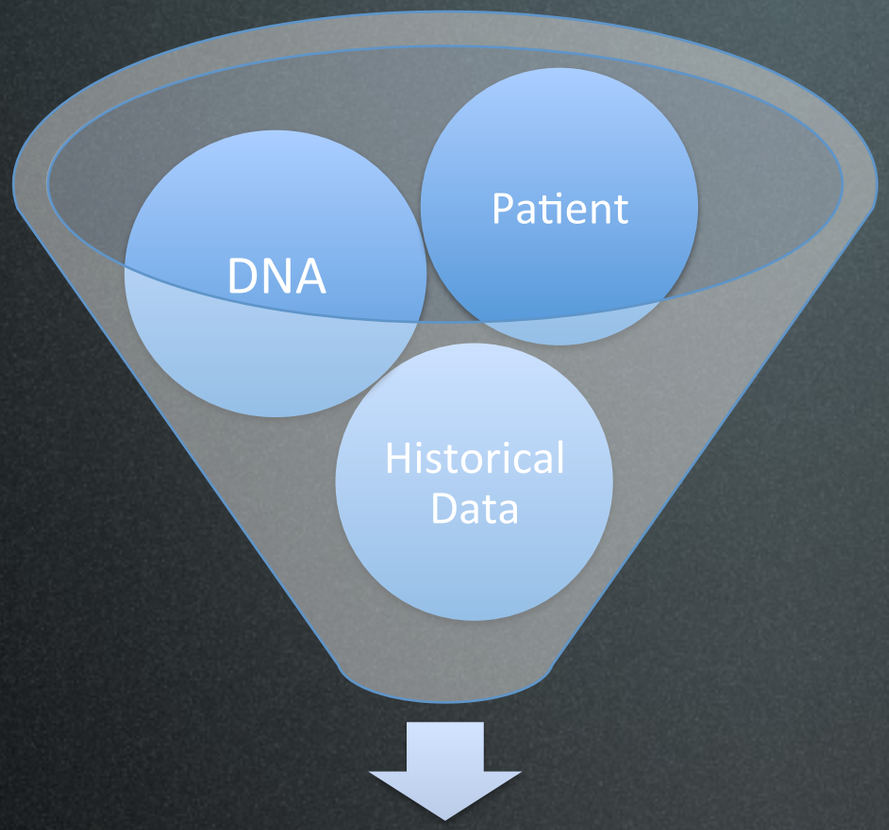
Data persistence has always been an afterthought



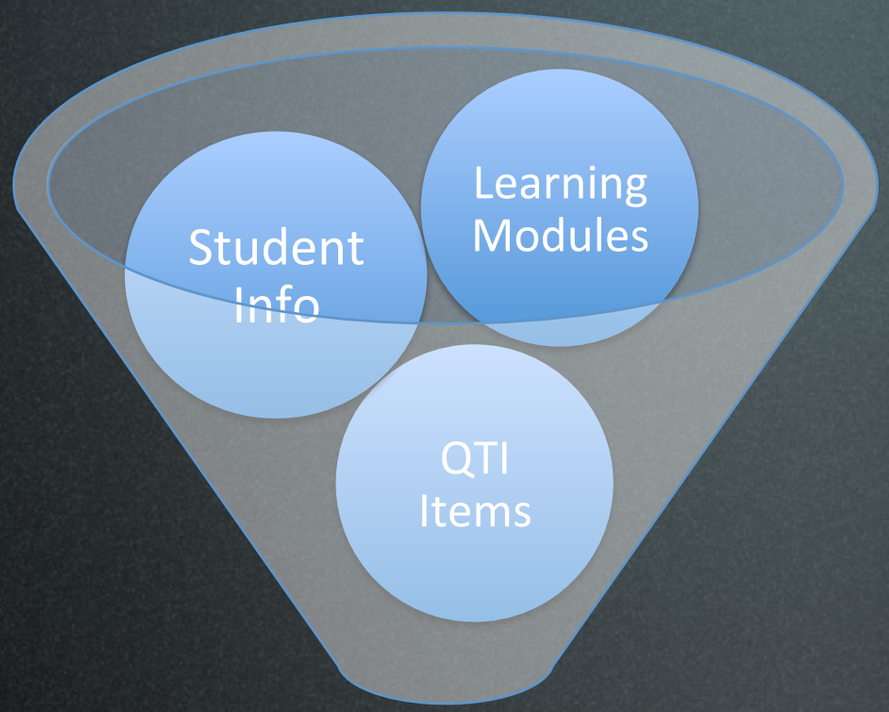
$$ BIG DATA $$



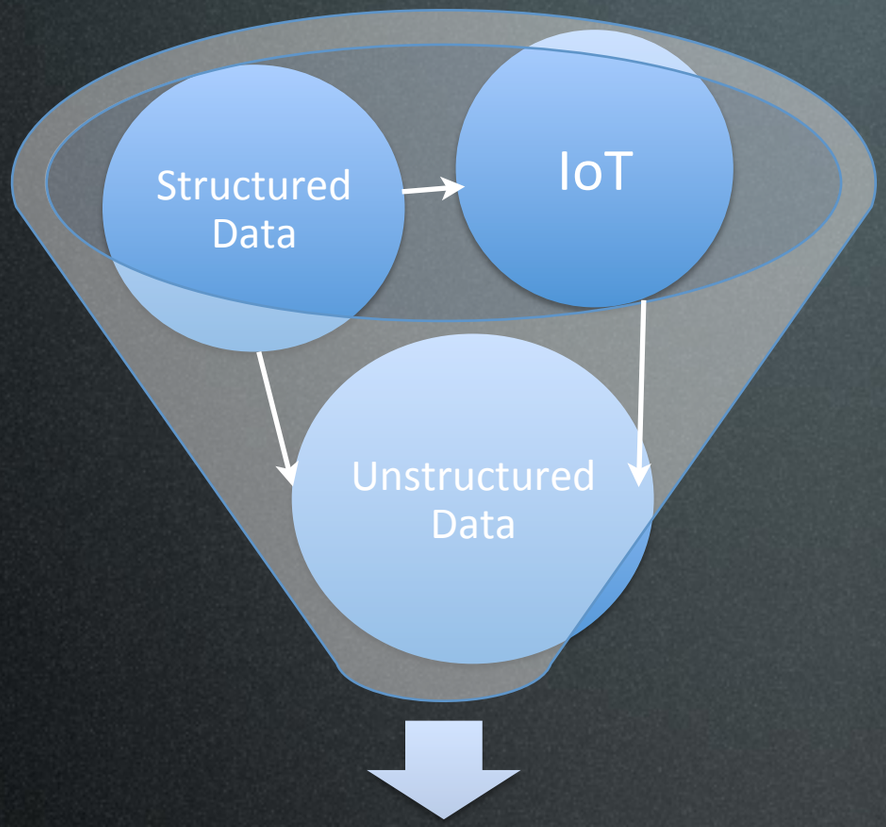
$$ Personalized Deals $$



$$ Cure Cancer$$

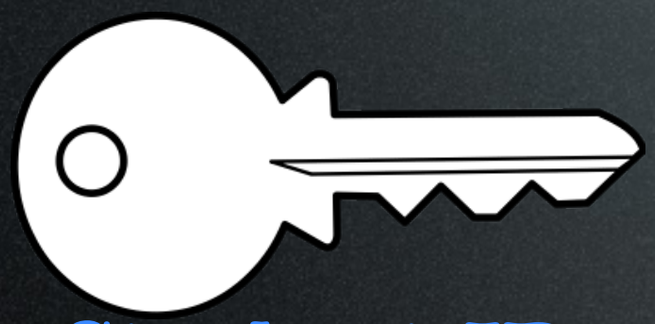


$$ Personalized Learning $$



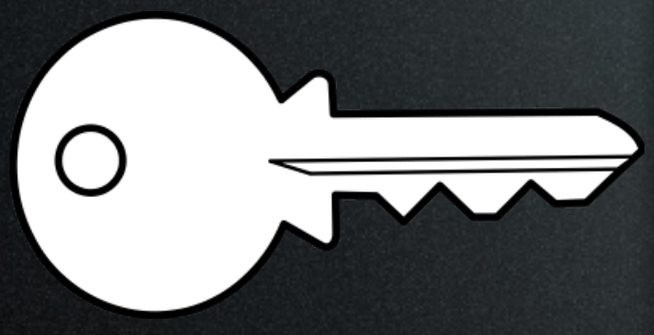
$$ Connected Data$$

Just use a key value store.
Best data storage ever!



Student ID

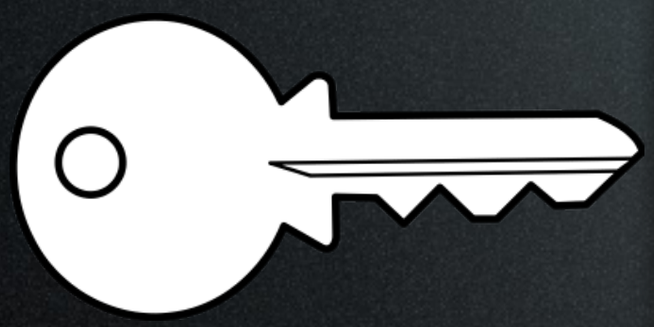
Test
Score



Student ID

Test Score

Embed Other Stuff



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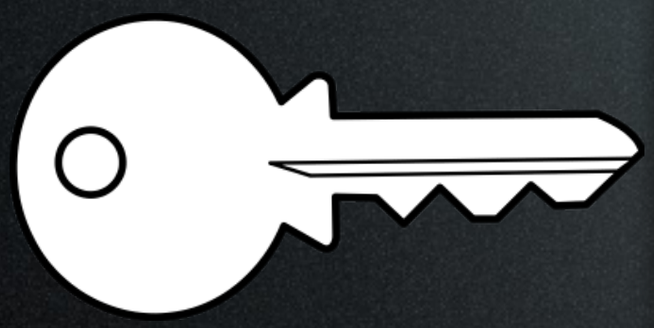
Test Score

Test Question



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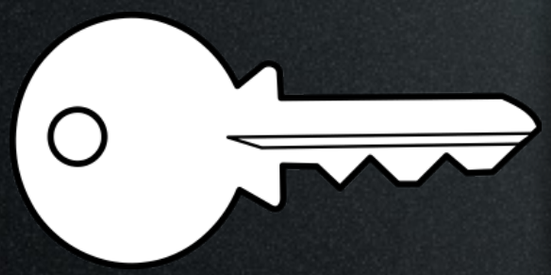
Test Score

Test Question

Concept Alignment

OUT OF SCREEN ERROR!!!



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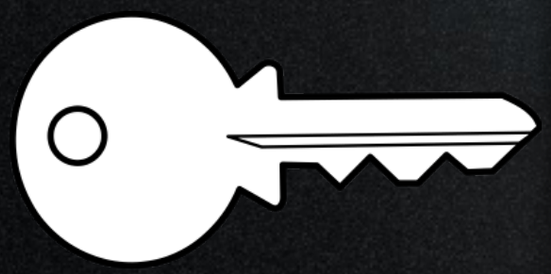
Test Question

Concept Alignment



Student ID

Test Score

Test Question

Concept Alignment

Test Score

Test Question

Concept Alignment

riak
HA HA!

Use a document database. It will be... Excellent

Assessment 1
Tiny Tim

Test Question 1
Test Question 2
Test Question 3

Assessment 1
Tiny Tim

Test Question 1
Test Question 2
Test Question 3
Test Question 4

Test Question 1

$1 + 1$

Test Question 2

$1 * 1$

Test Question 3

$1 - 1$

Test Question 4

$$\frac{1}{1}$$

Assessment 1
Tiny Tim

Test Question 1
Test Question 2
Test Question 3
Test Question 4

Test Question 1

Test Concept 1

$1 + 1$

Test Question 2

Test Concept 2

$1 * 1$

Test Question 3

Test Concept 2

$1 - 1$

Test Question 4

Test Concept 3

$$\frac{1}{1}$$

Assessment 1
Tiny Tim

Test Question 1
Test Question 2
Test Question 3
Test Question 4

Assessment 2
Tiny Tim

Test Question 1
Test Question 3
Test Question 4
Test Question 2

Test Question 1
Test Concept 1

1 + 1

Test Question 2
Test Concept 2

1 * 1

Test Concept 2

Multiplication

Test Concept 3

Division

Test Question 3
Test Concept 2

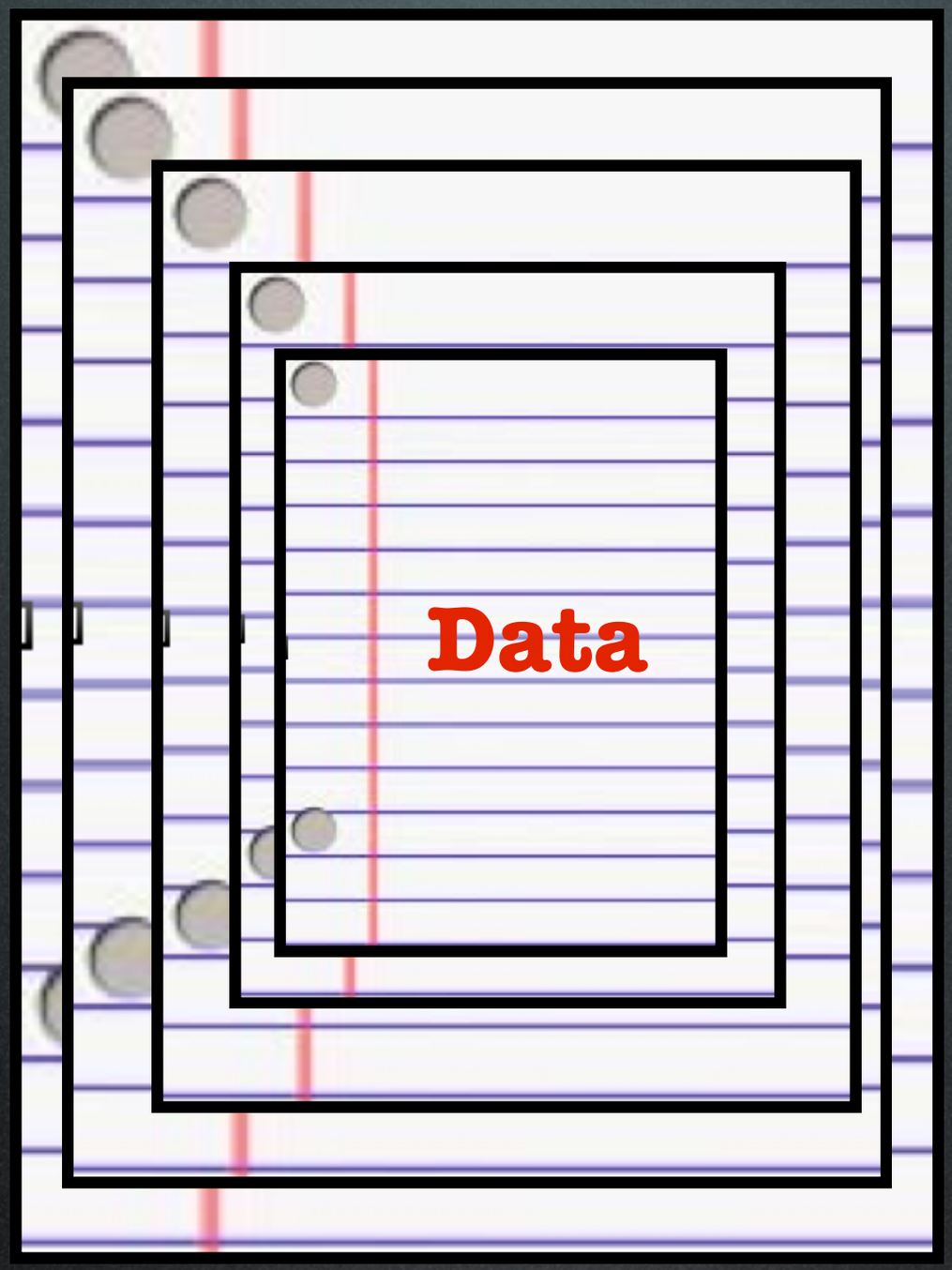
4 * 8

Test Question 4
Test Concept 3

$$\frac{1}{1}$$

Test Concept 1

Addition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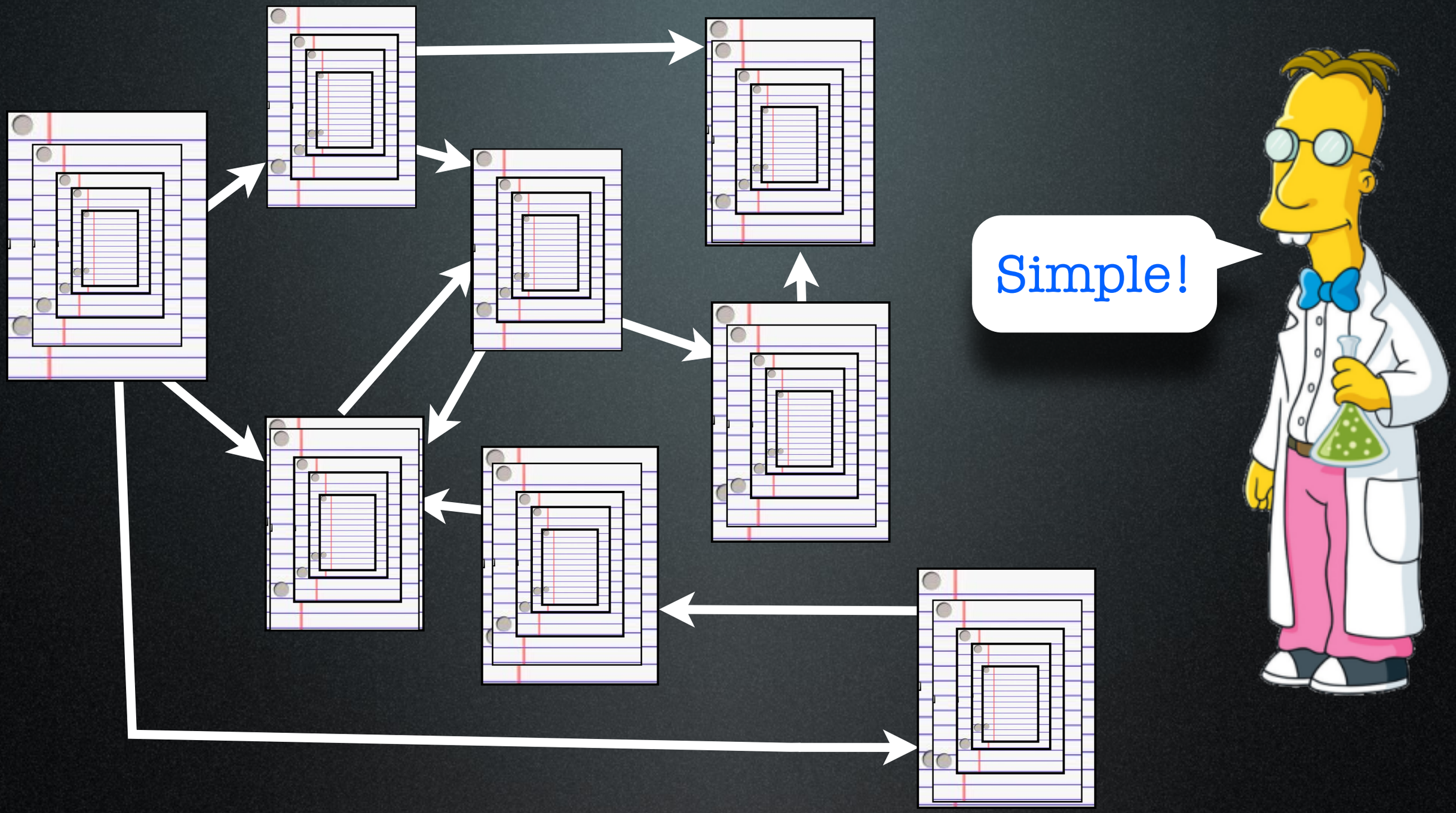
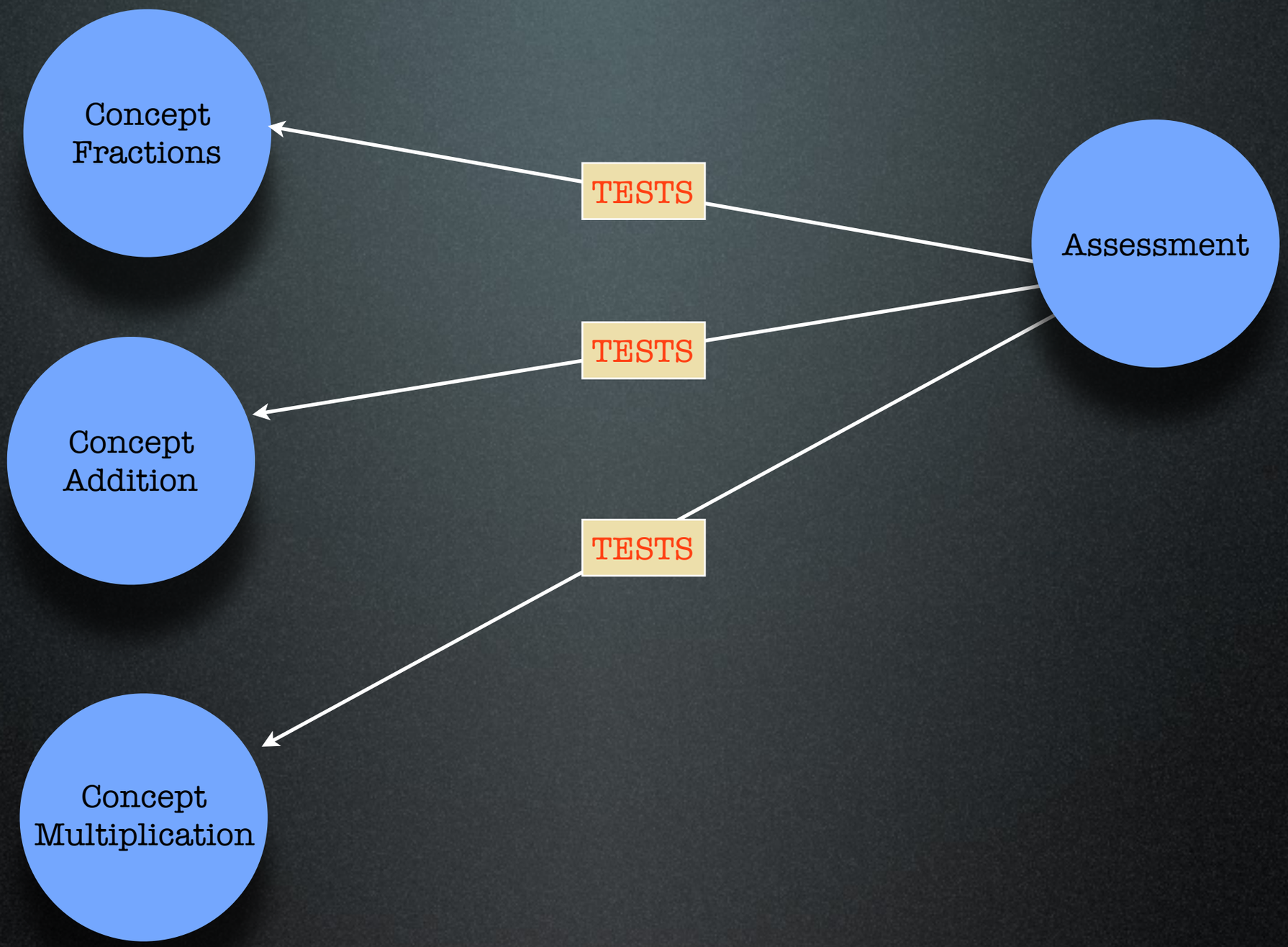

Simple!

What the...!

Seems like an index free adjacency problem
[0,1,1,
1,0,1,
1,1,0]

He means a graph database, boss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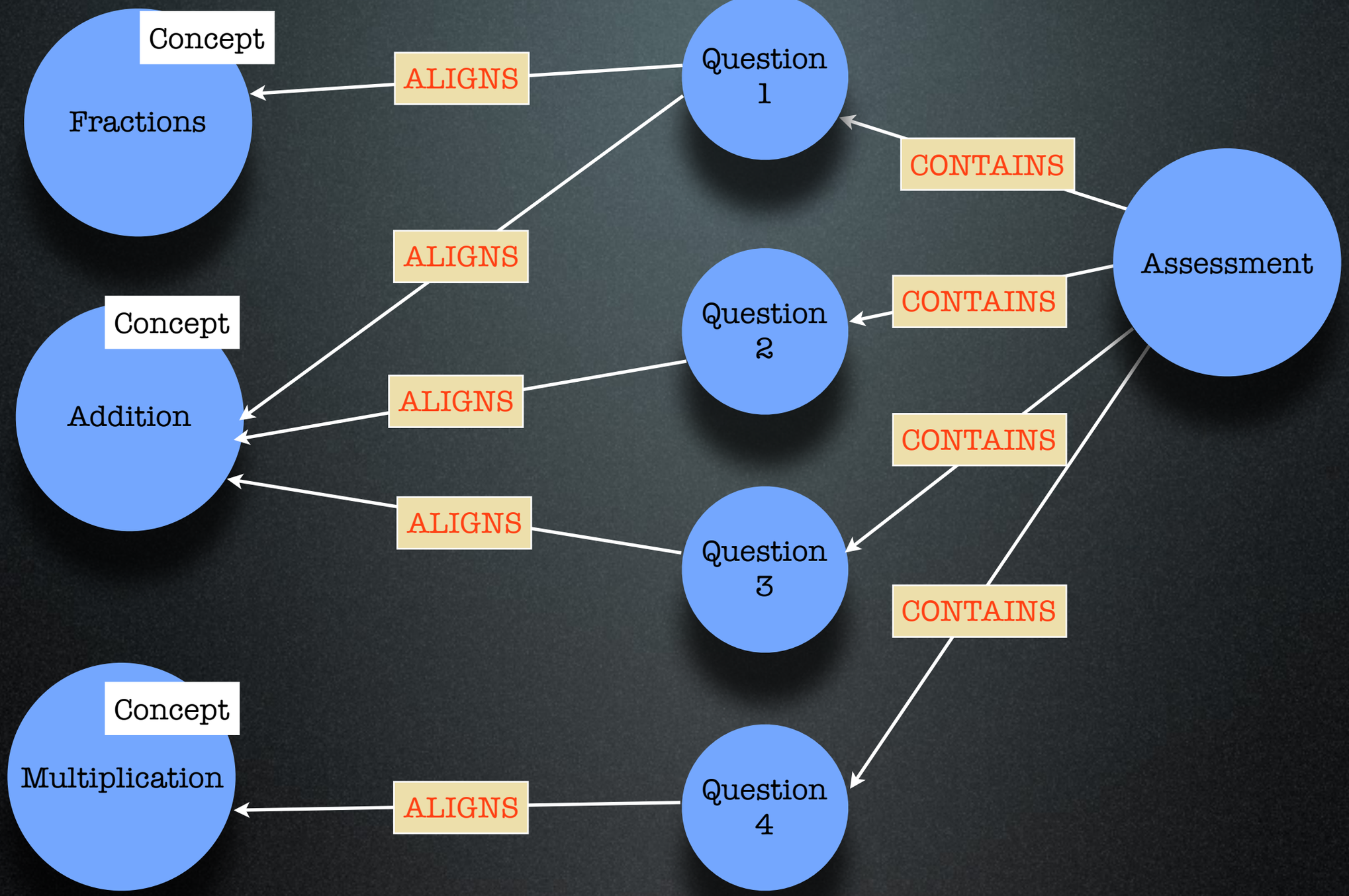
Fractions
TESTS
Assessment
TESTS
Concept
Addition
TESTS
Concept
Multiplication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Question 1
CONTAINS
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Question 2
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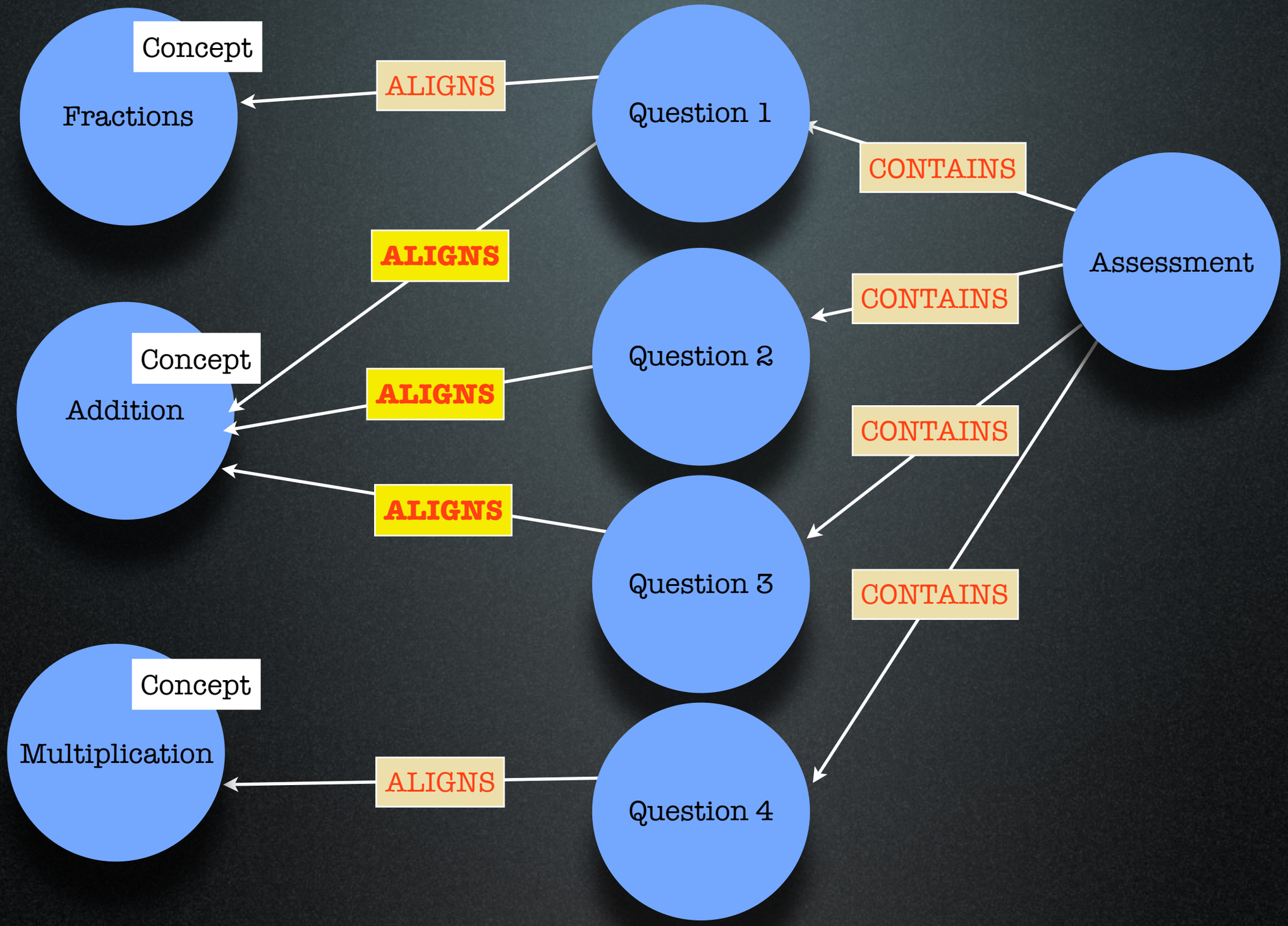
Question 3
CONTAINS
Concept
Multiplication
ALIGNS
Question 4


Concept
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Question 1
CONTAINS
Assessment
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Question 2
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Question 3
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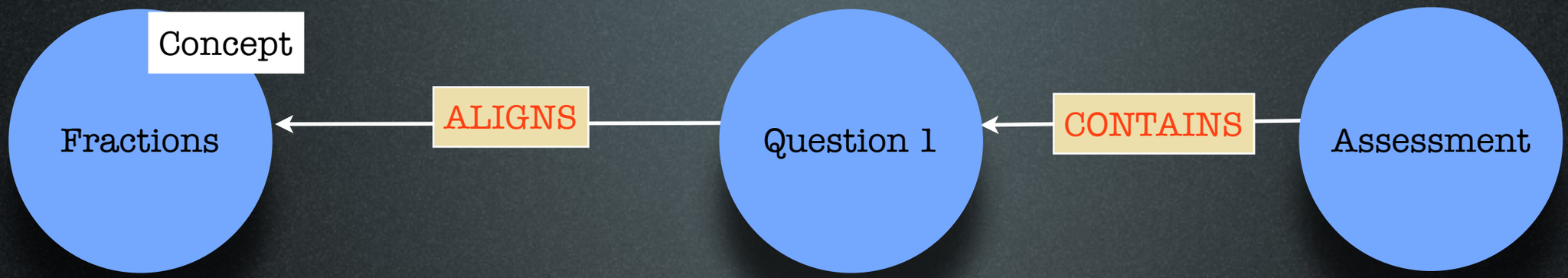
Concept
Multiplication
ALIGNS
Question 4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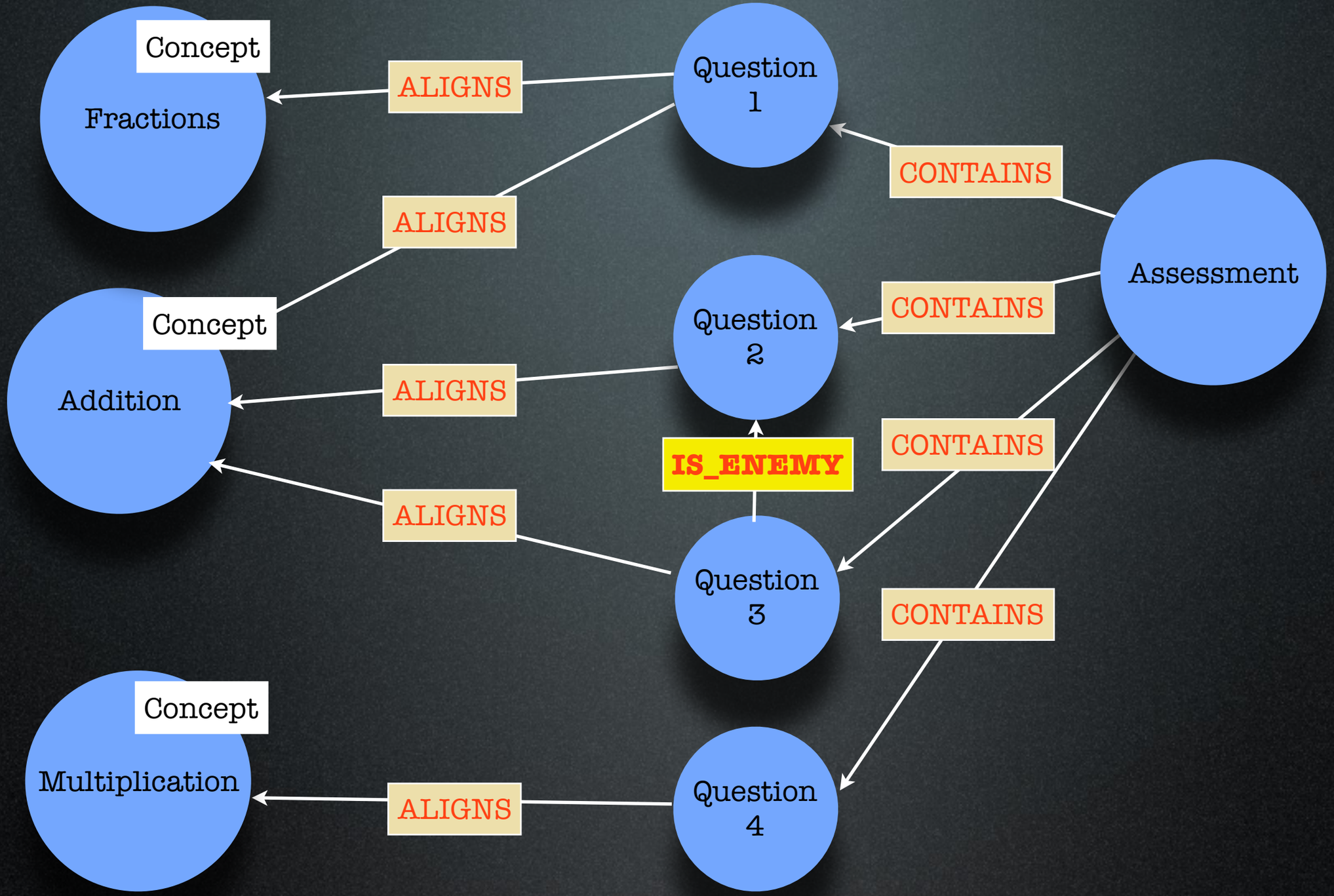
Question 1
CONTAINS
Assessment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Question 1
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Concept
Addition
Question 2
CONTAINS
ALIGNS
IS_ENEMY
CONTAINS
ALIGNS
Question 3
CONTAINS
Concept
Multiplication
ALIGNS
Question 4

120 + 470=

a) 590

b) 420

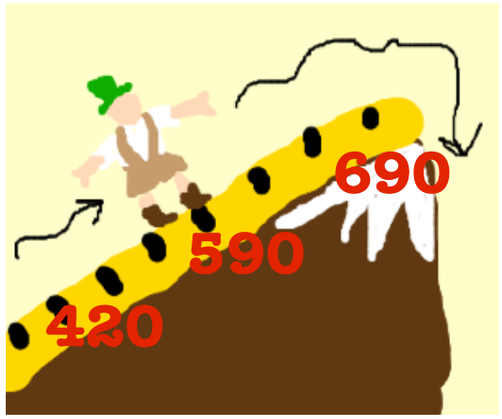
c) 690

120 + 470=

a) 590

b) 420

c) 690



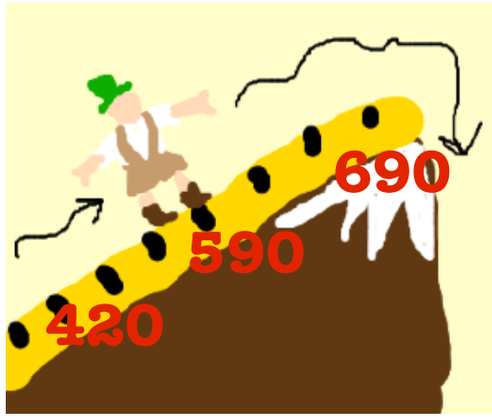
120 + 470=

120 + 470=

a) 590

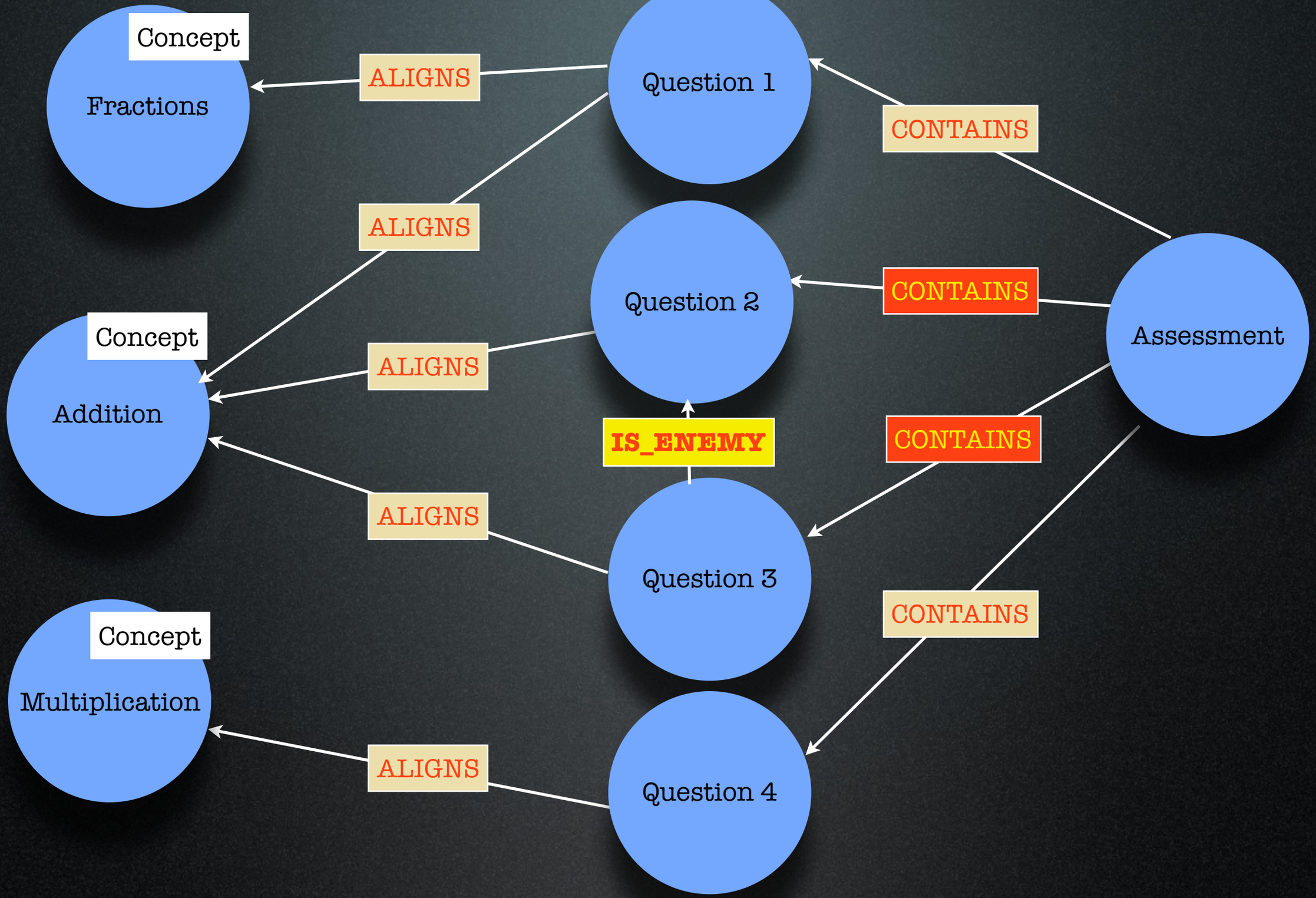
b) 420

c) 690



120 + 470=

ENEMIES!!!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Question 2
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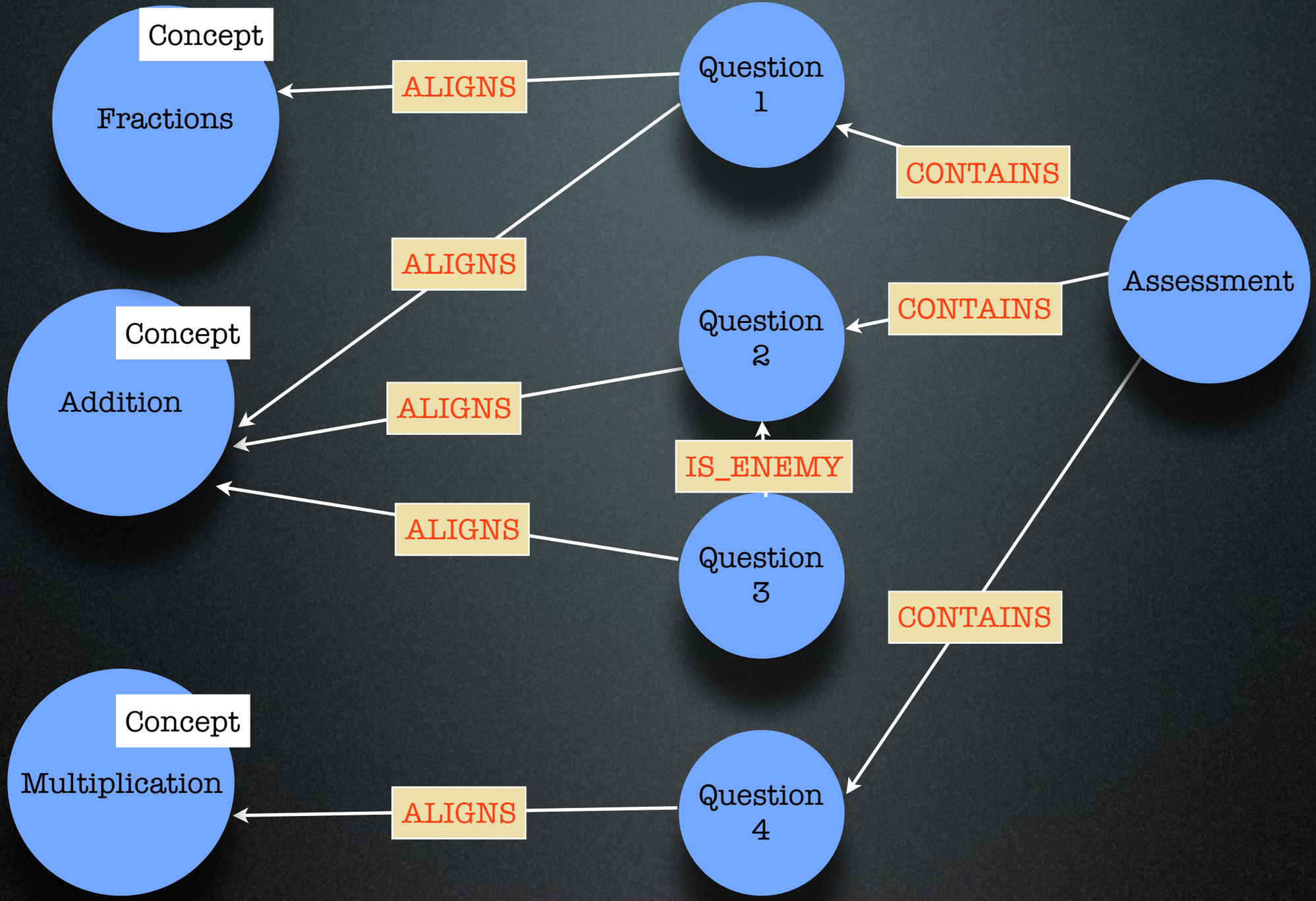
ALIGNS
Question 4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ALIGNS
Question 3
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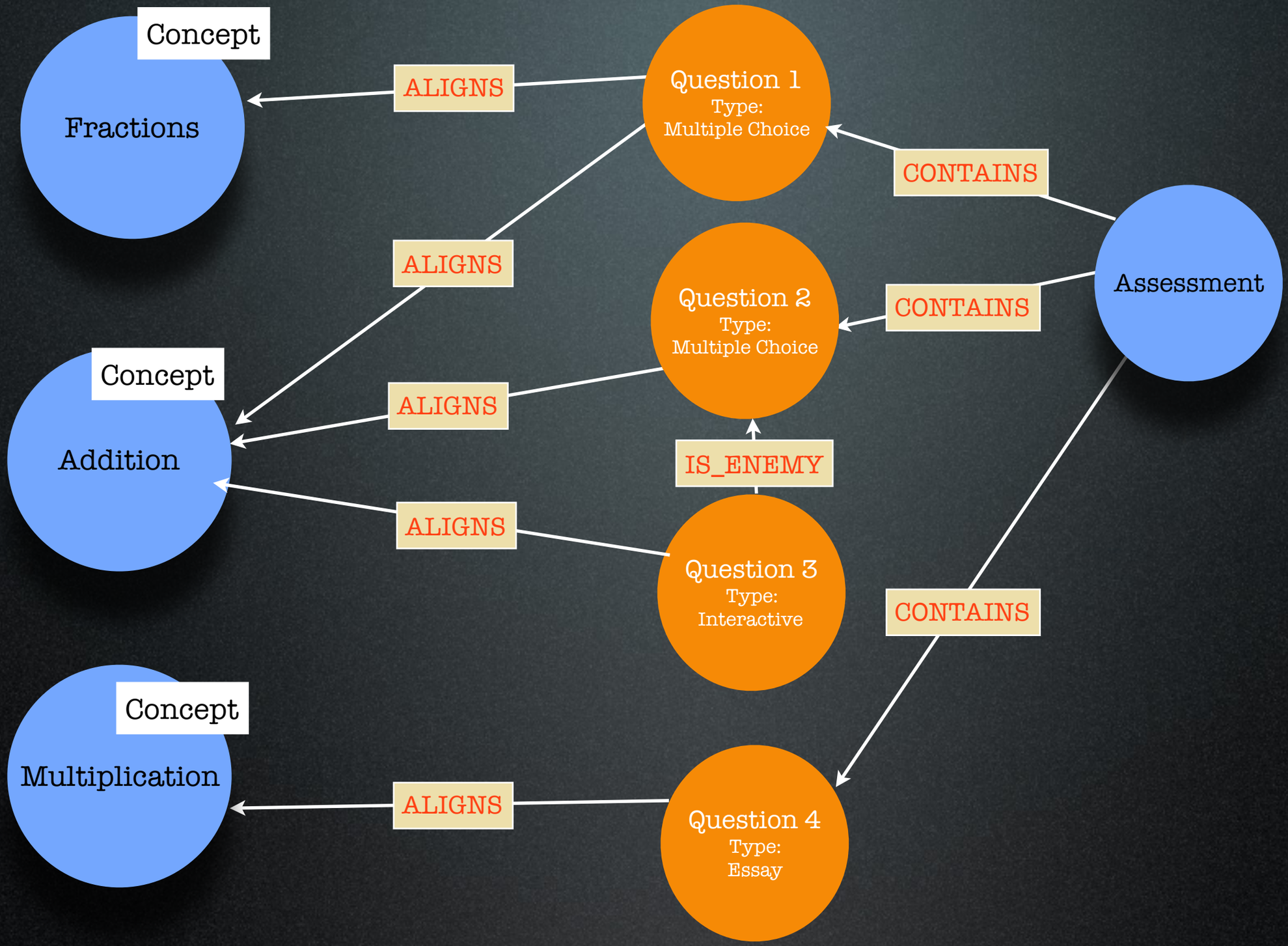
Concept
Multiplication
ALIGNS
Question 4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Question 1
Type:
Multiple Choice
CONTAINS
ALIGNS
Question 2
Type:
Multiple Choice
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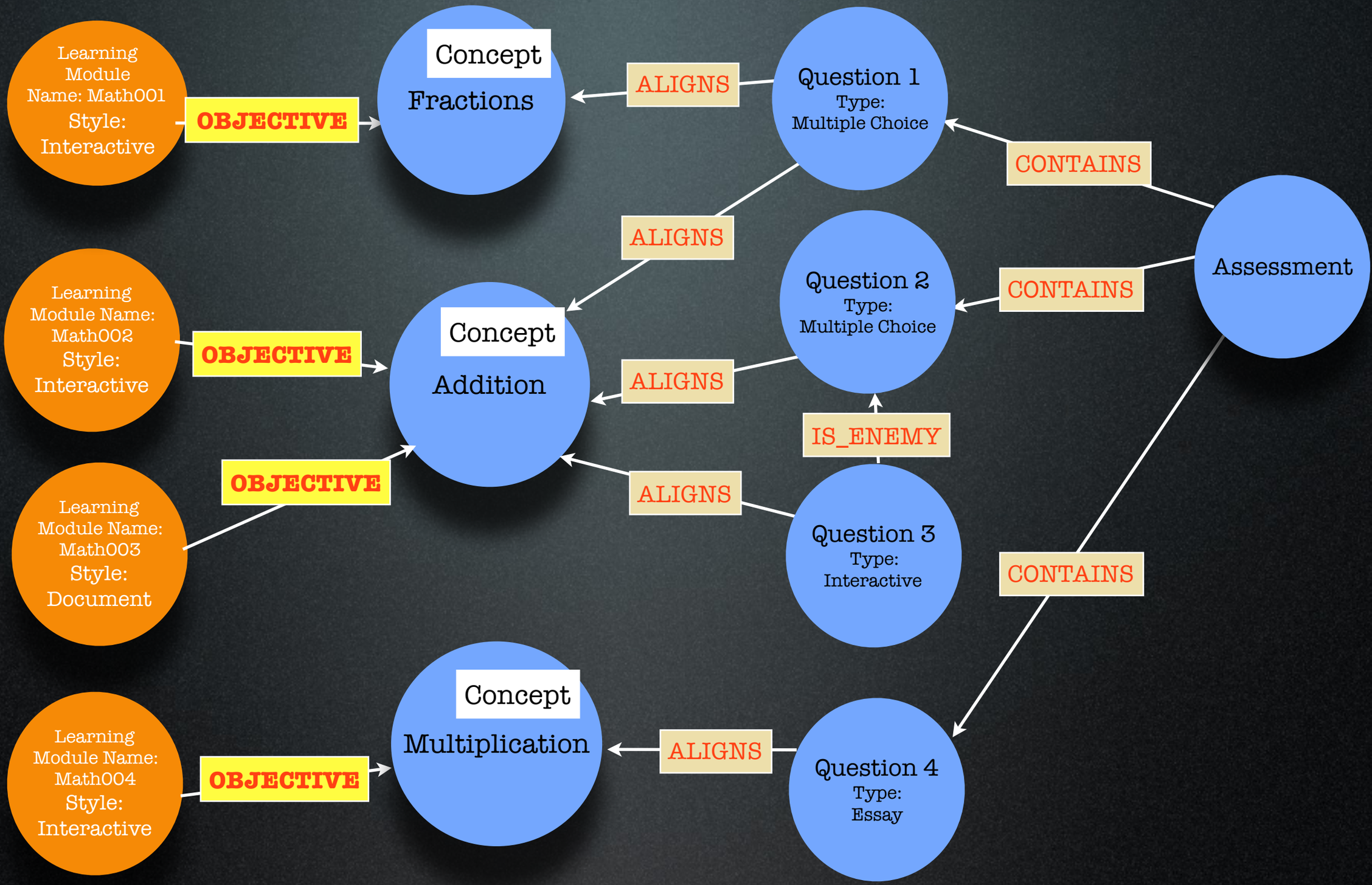
Concept
Addition
ALIGNS
IS_ENEMY
ALIGNS
Question 3
Type:
Interactive
CONTAINS
Concept
Multiplication
ALIGNS
Question 4
Type:
Essay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Concept Fractions
ALIGNS
Question 1 Type: Multiple Choice
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Assessment
ALIGNS
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OBJECTIVE
Concept Addition
Question 2 Type: Multiple Choice
CONTAINS
ALIGNS
IS_ENEMY
OBJECTIVE
Learning Module Name: Math003 Style: Document
ALIGNS
Question 3 Type: Interactive
CONTAINS
Learning Module Name: Math004 Style: Interactive
OBJECTIVE
Concept Multiplication
ALIGNS
Question 4 Type: Essay

Learning Module Name: Math001 Style: Interactive

OBJECTIVE

Concept

Fractions

ALIGNS

Question 1 Type: Multiple Choice

CONTAINS

Assessment

ALIGNS

Learning Module Name: Math002 Style: Interactive

OBJECTIVE

Concept

Addition

ALIGNS

Question 2 Type: Multiple Choice

CONTAINS

IS_ENEMY

OBJECTIVE

Learning Module Name: Math003 Style: Document

ALIGNS

Question 3 Type: Interactive

CONTAINS

Concept

Multiplication

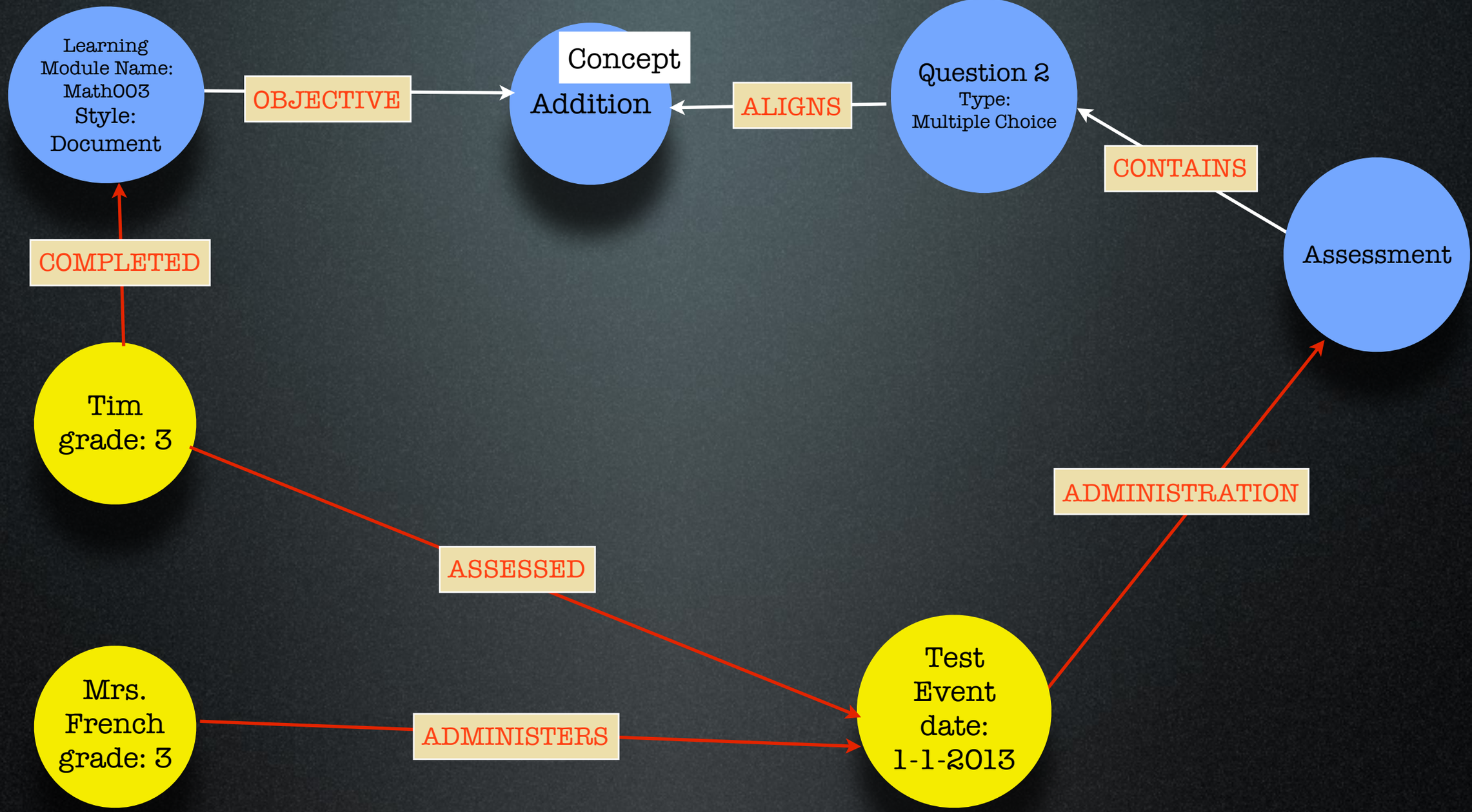
Learning Module Name: Math004 Style: Interactive

OBJECTIVE

ALIGNS

Question 4 Type: Essay

Test Event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Concept
Addition
ALIGNS
Question 2
Type: Multiple Choice
CONTAINS
Assessment
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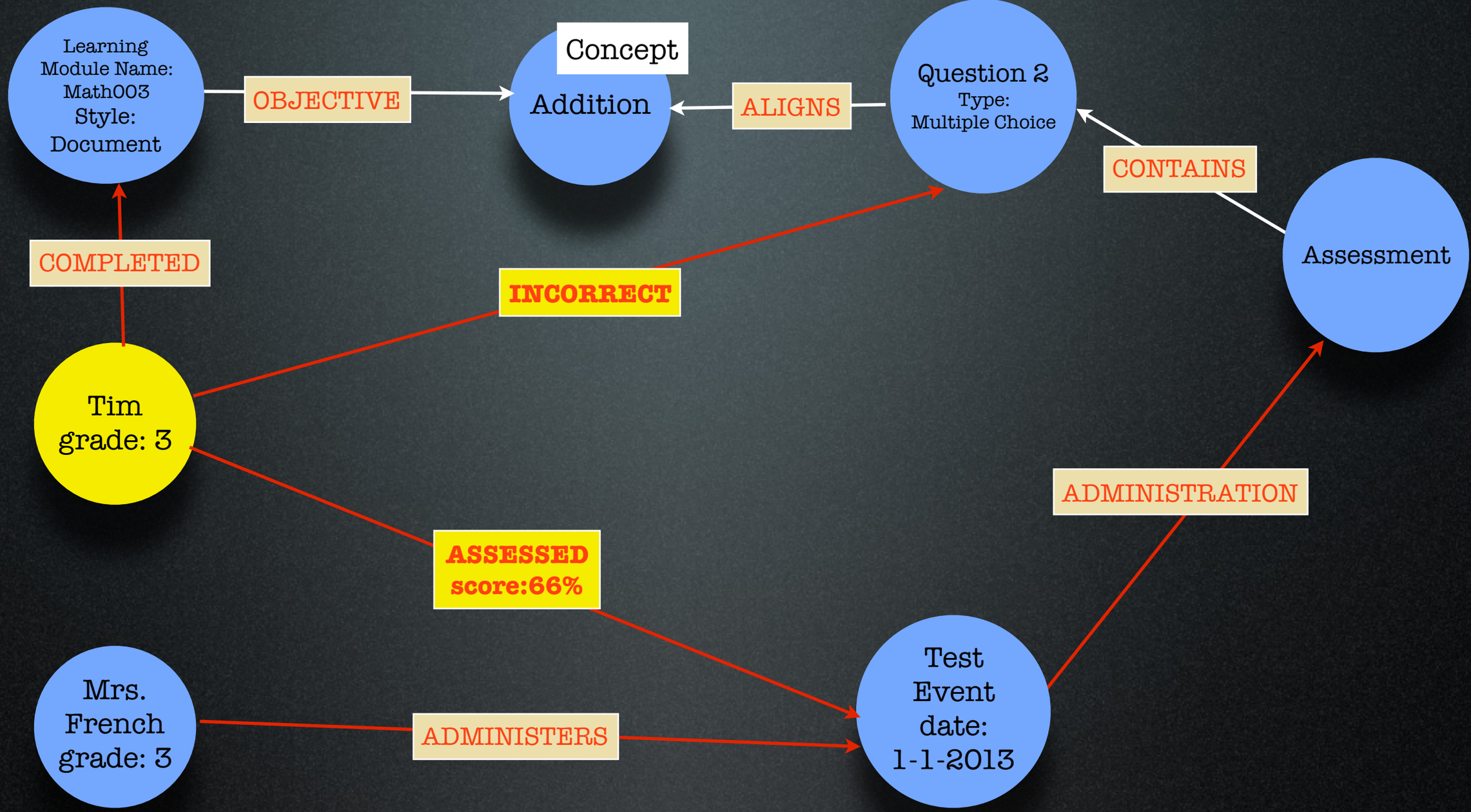
Tim
grade: 3
ASSESSED
ADMINISTRATION
Mrs. French
grade: 3
ADMINISTERS
Test Event
date: 1-1-2013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Concept
Addition
ALIGNS
Question 2
Type: Multiple Choice
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Assessment
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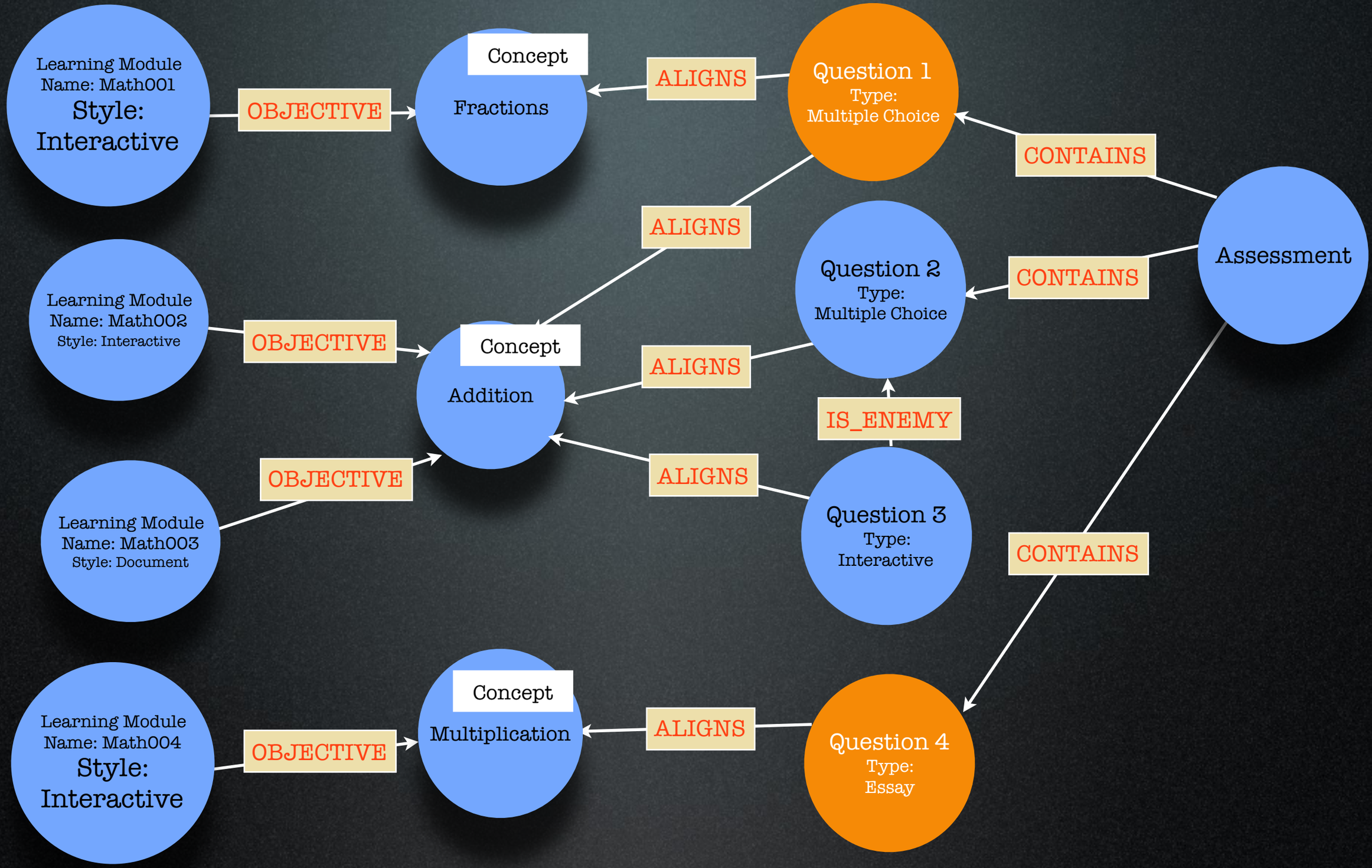
INCORRECT
Tim
grade: 3
ASSESSED
score:66%
ADMINISTRATION
Mrs. French
grade: 3
ADMINISTERS
Test Event
date: 1-1-2013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Learning Module
Name: Math002
Style: Interactive
OBJECTIVE
Concept
Addition
ALIGNS
Question 2
Type:
Multiple Choice
CONTAINS
IS_ENEMY
OBJECTIVE
Learning Module
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Style: Document
ALIGNS
Question 3
Type:
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Learning Module
Name: Math004
Style:
Interactive
OBJECTIVE
Concept
Multiplication
ALIGNS
Question 4
Type:
Essay

Learning Module
Name: Math001
Style:
Interactive

OBJECTIVE

Concept
Fractions

ALIGNS

Question 1
Type:
Multiple Choice

CONTAINS

Assessment

ALIGNS

Learning Module
Name: Math002
Style: Interactive

OBJECTIVE

Concept
Addition

ALIGNS

Question 2
Type:
Multiple Choice

CONTAINS

IS_ENEMY

OBJECTIVE

Learning Module
Name: Math003
Style: Document

ALIGNS

Question 3
Type:
Interactive

CONTAINS

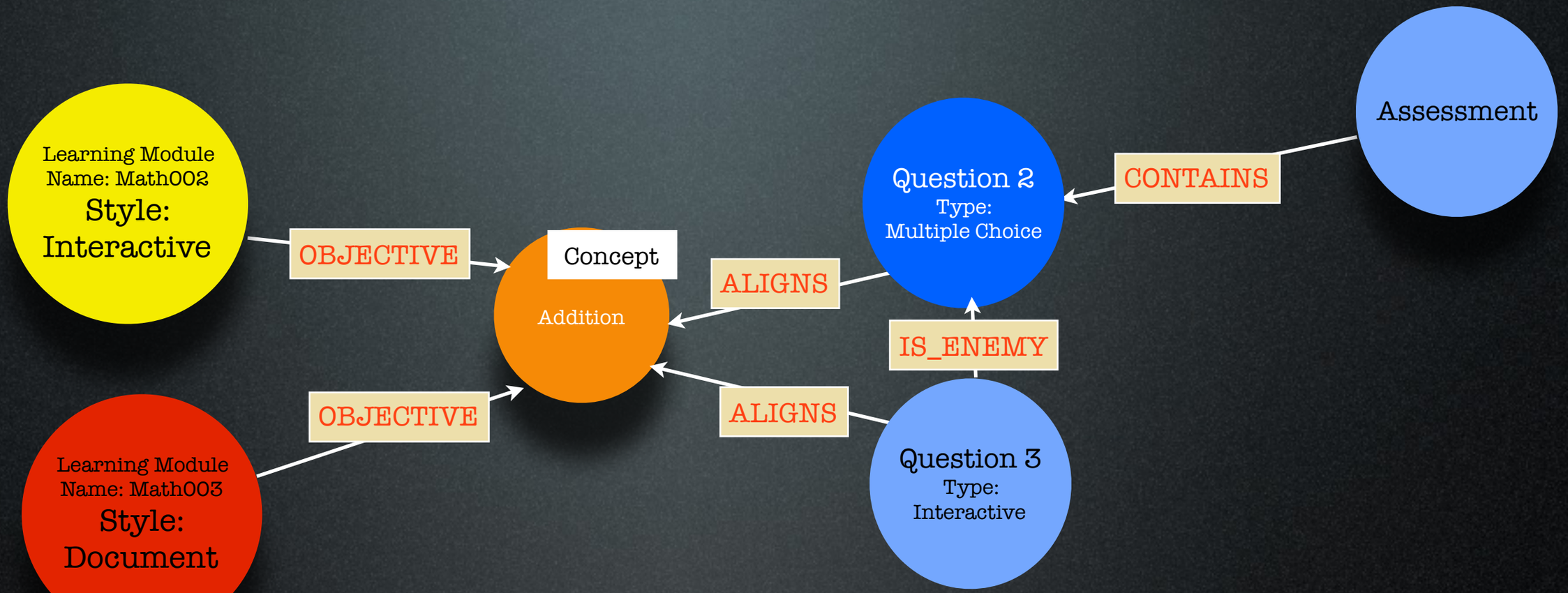
Learning Module
Name: Math004
Style:
Interactive

OBJECTIVE

Concept
Multiplication

ALIGNS

Question 4
Type:
Essay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Addition
Learning Module
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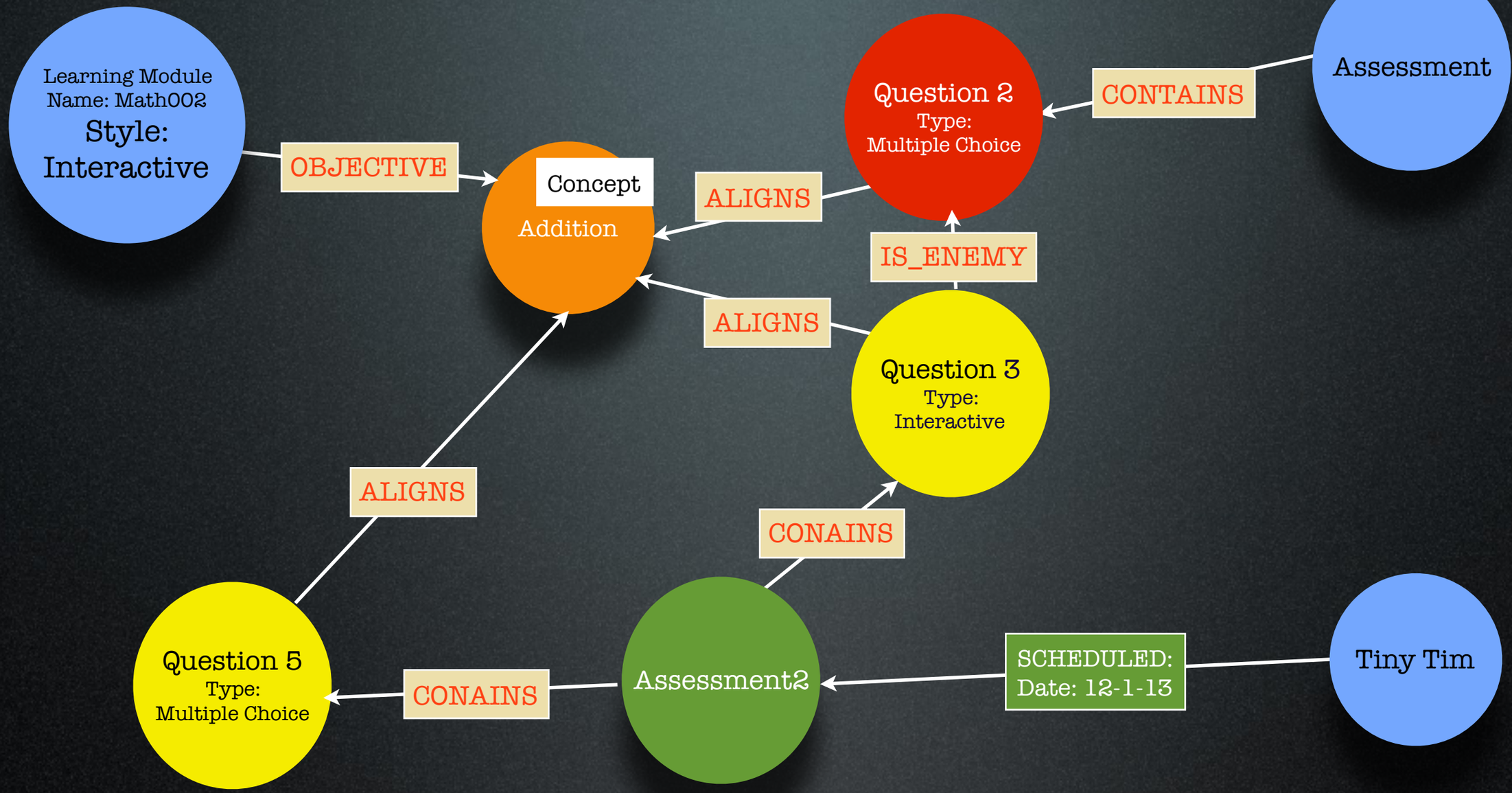
IS_ENEMY
ALIGNS
Question 3
Type:
Interactive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Name: Math002
Style:
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OBJECTIVE
Concept
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Question 2
Type:
Multiple Choice
CONTAINS
Assessment
IS_ENEMY
ALIGNS
Question 3
Type:
Interactive
ALIGNS
CONAINS
Question 5
Type:
Multiple Choice
CONAINS
Assessment2
SCHEDULED:
Date: 12-1-13
Tiny Tim

Like I said, boys, a graph database! Let's see how it works.

Come for the connected data, stay for the Cypher

http://localhost:7474/browser/

Data storage is no longer an afterthought

LEARNING MODULE RECOMMENDATION...
CLASSROOM ASSIGNMENT...
TEST CREATION...
ADAPTIVE TESTING...
STUDENT PAIRING REFERRAL...
OTHERS?

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