



# STEM Skill Booster: Knight Training

## Supplies

- Craft Sticks (6)
- Rubber Bands (5)
- Plastic Spoon
- Pom-Pom Ball
- Paperclip
- Glue (not included)
- Markers or Crayons (not included)
- Scissors (not included)
- Optional – Cereal Box or Cardboard (not included)

## Instructions

Can you become a Knight of the West Fargo Public Library? Complete the packet to test your skills. We have devised a number of activities for you to complete and gain your knighthood. You will design your Coat of Arms, build a castle, construct a catapult and encounter dragons. Good luck!

## STEM Concepts

**Construct** – to build or create

**Engineer** – a person who design and builds machines, systems or structures

**Four Forces of Flight** – the four forces that help an airplane (or object) fly

**Lift** – holds the airplane in the air, often created by the wings

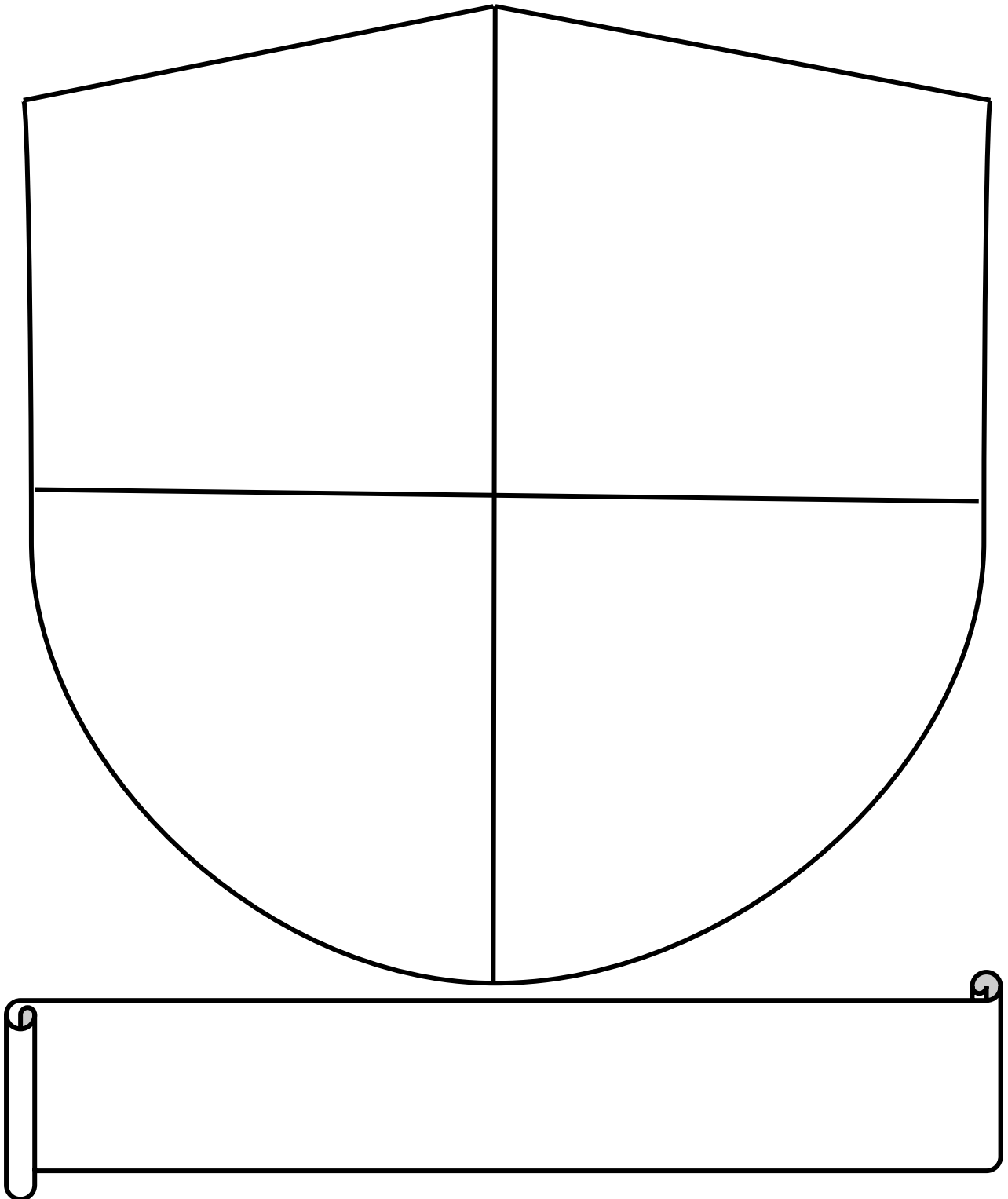
**Thrust** – moves an aircraft in the direction of motion, often created by an engine or propeller

**Drag** – acts opposite to the direction of motion or slows down an object

**Weight** – caused by gravity, bring objects down

## Coat of Arms

A Coat of Arms was the image or icon of a family in medieval times. Colors and symbols were chosen to represent different strengths and the history of the family. Design your own Coat in the drawing below. Choose colors and images to represent what you think a valiant knight should be or to represent your family.



## Shield

Often a Coat of Arms is worn on a knight's shield. For an added challenge build your shield and include your Coat of Arms.

1. Draw the shape of a shield onto something sturdy you can cut, like cardboard or an empty cereal box.
2. Then cut it out and decorate it. If using cardboard, you may want to ask a grown-up for help cutting it out.
3. To attach a handle to the back of the shield, use a strip of leftover cardboard or cereal box.
4. Use tape to attach your handle, or put a small amount of glue on each end and then press the glue side down facing the back of the shield. When it's dry, it will be a handle to hold your shield.
5. Go off on your Hero's Journey!

## Castle

Every knight needs their castle or fortress. Can you design and build a life size castle? Use blankets, towels, pillows and more to construct your *fort*-ress. Make sure to talk with a grownup to help find supplies.

## Knight's Quest

Every knight ventures on an epic quest to save the kingdom. Can you complete this quest for the Kingdom of WFPL? Venture into your backyard or out for a walk to find each of the items on the quest. Make sure to check in with a grownup before you explore nature out on your quest.

- |   |  |
|---|--|
| <input type="checkbox"/> A white rock       | <input type="checkbox"/> Something blue              |
| <input type="checkbox"/> A bug or worm      | <input type="checkbox"/> Something red               |
| <input type="checkbox"/> A crooked stick    | <input type="checkbox"/> Something yellow            |
| <input type="checkbox"/> A flower petal     | <input type="checkbox"/> A three or four leaf clover |
| <input type="checkbox"/> Something you LIKE | <input type="checkbox"/> Look for a squirrel         |
| <input type="checkbox"/> Something soft     | <input type="checkbox"/> Look for a bird             |
| <input type="checkbox"/> Something round    | <input type="checkbox"/> A spider web                |
| <input type="checkbox"/> Something bumpy    |  |

## Catapult

A catapult was a device used to launch stones or projectiles a great distance without the use of explosives. A knight may use this tool to defend their castle or kingdom. To build your catapult, grab the spoon, craft sticks, rubber bands, and pom-pom ball.

1. Make a stack of 4 craft sticks and use rubber bands to tie them together on both ends.
2. Use 2 rubber bands to secure the plastic spoon to one of the remaining 2 craft sticks. The rounded end of the spoon should be off or above the end of the craft stick.
3. Stack the craft stick with the spoon on top of remaining craft stick. Use the last rubber band to tie the sticks together at the end without the rounded spoon part.
4. Pull the 2 sticks apart and wedge the stack of 4 craft sticks between them.
5. Place the ball onto the spoon. Hold the catapult with one hand, and use the other hand to push down the spoon.
6. Release the spoon and watch the ball fly!

These instructions describe just one way out of many to build a catapult. As an added challenge, can you design and build a catapult in a different way?

## Dragons

Dragons could be the perfect sidekick for you in your quest to become a knight. They can fly far (and carry you with them), breath fire and offer protection. They can also be your best friend! Next on your quest are two activities featuring dragons.

Activity One: Create your flying dragon friend!



1. Color the dragon body and wings.
2. Cut out the body and wings.
3. Fold along the dotted lines.
4. Glue the wings on top of the body.
5. Add the paper clip to the front tip/nose of the dragon. (The paper clip adds some weight to the dragon to help it fly).
6. Toss your dragon and let it fly!

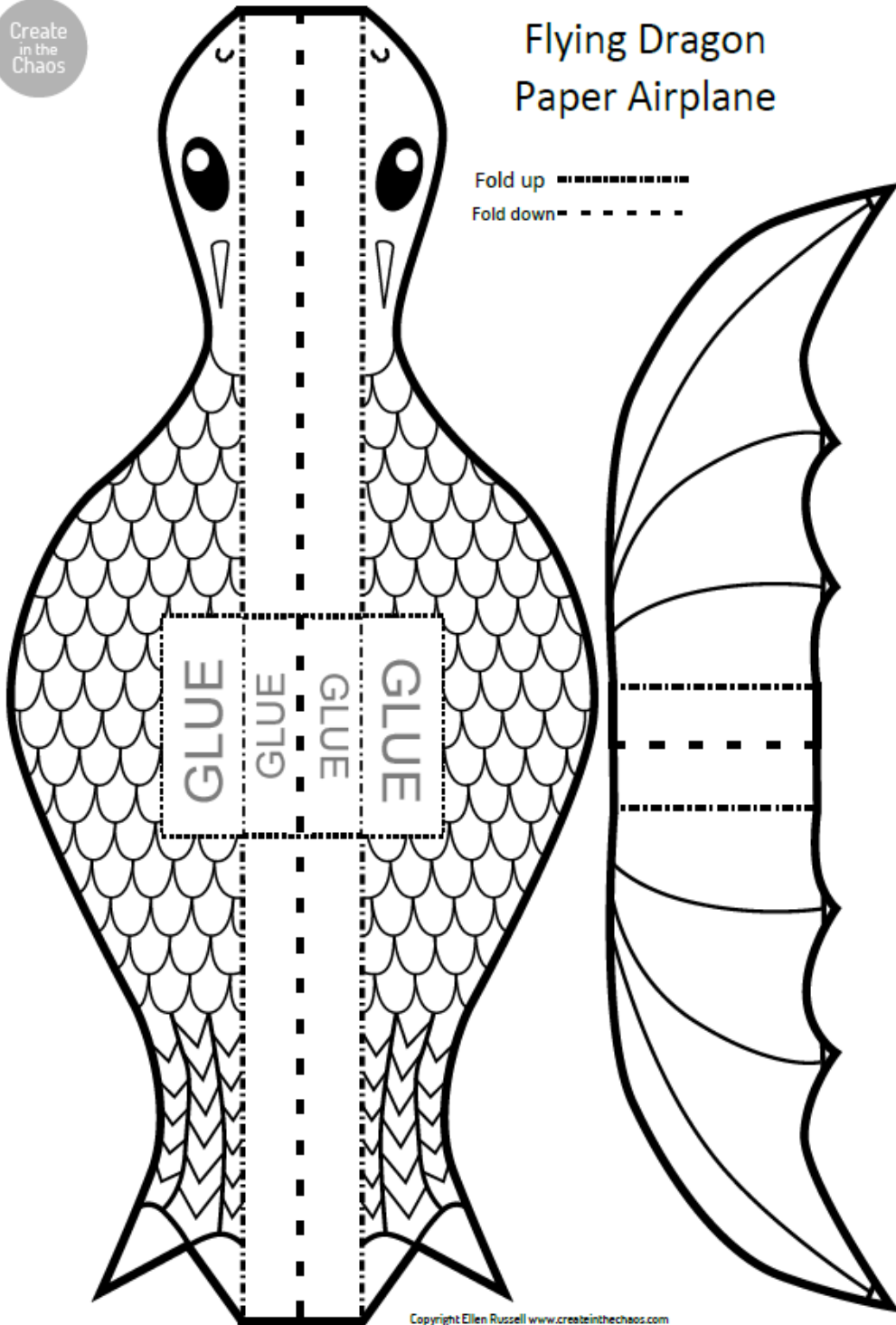
Activity Two: Solve the dragon number maze and reach the castle!

# Activity One



## Flying Dragon Paper Airplane

Fold up   
Fold down 



# Activity Two

## Dragon Number Maze



The dragon wants to reach the castle but was defeated by the number maze. Can you help it reach its destination by finding a path? Start from 2 and count by 2s until you reach 200.

120	118	116	114					16	18
122	124	126	112				12	14	20
140	138	128	110				10	8	22
142	136	130	108	102	100	2	4	6	24
144	134	132	106	104	98	32	30	28	26
146	148	150	156	158	96	34	36	42	44
172	170	152	154	160	94	92	38	40	46
174	168	166	164	162	88	90	52	50	48
176	178	196	198	200	86	84	54	56	58
182	180	194				82	80	62	60
184	190	192				76	78	64	66
186	188					74	72	70	68