

Section 4

Team 6

Fall 2023

## Business Plan

Business Name: 4-Arm

We are revolutionizing gym equipment with the creation of a new free weight that specializes in working the forearm muscles in the arm.



### Team Members:

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## Executive Summary

4-Arm Inc.  
Sarah DeLucia  
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**Phone:** 732-575-5271  
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**Management:** General Manager, Marketing and Sales Manager, Operations Manager

**Industry:** 339920- Sporting and Athletic Good Manufacturing

**Number of Employees:** 19

**Amount of Financing Sought:** 20% debt and 80% equity.

**Investment Sources:** We are 80% equity funded with 75% of that being from owners and 25% being venture capital and the last 20% is a loan from the bank for \$1,100,000.

**Use of Funds:** Equipment, materials, office space, factory space, SG&A expenses, set up costs, salaries.

**Business Description:** 4-Arm is based out of Allentown, Pennsylvania. We are taking fitness to the next level allowing all levels of experience to work their forearm with ease. With this new dumbbell, all gymgoers will be able to work their forearm muscles with a newly designed easy to handle piece of gym equipment.

**Products/services:** The 4-Arm is a dumbbell that utilizes a unique shape that targets the forearm muscles and improves grip strength. The non-slip handle allows users to easily pick up and maximize effort in the gym. This product will sell for \$29.99 for the first 2 years of operation, and \$34.99 for the next three. The product costs our company \$7.30 to produce.

**Competitive Advantage:** 4-Arm's unique design sets itself apart from its competition, there are no free-weights on the market that target the forearm. Additionally, 4-Arm has a removable plate, allowing users to adjust their weight, further differentiating ourselves from our competition.

**Distribution Channels:** We plan to sell via our website with hopes of getting into retail stores such as Dicks Sporting Goods, Target, and Walmart and online stores like Amazon after year 5.

**Competition:** Bowflex, CAP Barbell, PowerBlock, Rogue Fitness, NordicTrack, Ironmaster, and XMark Fitness are our competitors in the free-weight industry. These brands use the standard dumbbell design and weight distribution. We plan on competing with these companies for the specialization factor that our free weight provides. Our free weight separates itself from the competition by having a lower price and being the only product on the market with this specific design and function.

### Financial Projections (Unaudited):

	2023	2024	2025	2026	2027
<b>Revenue</b>	\$4,172,538	\$4,255,970	\$5,069,816	\$5,178,800	\$5,291,713
<b>EBIT</b>	\$307,981	\$255,668	\$676,601	\$727,888	\$702,884

## **Narrative**

**Elevator Pitch:** Are you tired of struggling to build stronger and more defined forearms with generic free-weights? Would you like to strengthen your grip while performing familiar exercise movements? Meet 4-Arm, the revolutionary free-weight designed to isolate the forearm muscles and develop a strengthened grip. Our product is a uniquely shaped free-weight that allows users to follow a traditional arm curl. However, the weight distribution forces the forearm muscles to be targeted, additionally generating better grip strength. 4-Arm is a free-weight that everyone can use, as it features up to 4 weight levels in one.

**Product Description:** 4-Arm resembles an upside-down "U", where the bulk of the free-weight hangs over the user's forearm. Our product is equipped with a high-quality rubber grip with finger grooves to enhance the comfort of the user. Our product is 20lbs and is made up of four separate 5lb castings that can be removed and attached from each other with no clips needed. Slide the cast into place effortlessly!

**Competitive Advantage:** Our competitive advantage comes from the specialization of our product. There is no other free-weight that offers complete targeted forearm muscle engagement. This free-weight is specifically designed to strengthen and engage the forearm muscles more effectively than traditional free-weight. The unique shape and weight distribution engages the flexor carpi ulnaris and the extensor carpi radialis longus, which are two of the main muscles in the forearm. Our product is also extremely compact and easy to carry, which is ideal for our target market, people who want to work on their forearm strength at home or in the gym.

**Value Proposition:** Investors will find significant value in our company because we are bringing a new specialized product to a fast-growing market: the fitness industry. Nobody sells a free-weight that looks like ours or works like ours, making our product

unmatched. Gymgoers are always on the hunt for the next big innovation in the industry, and 4-Arm is exactly that!

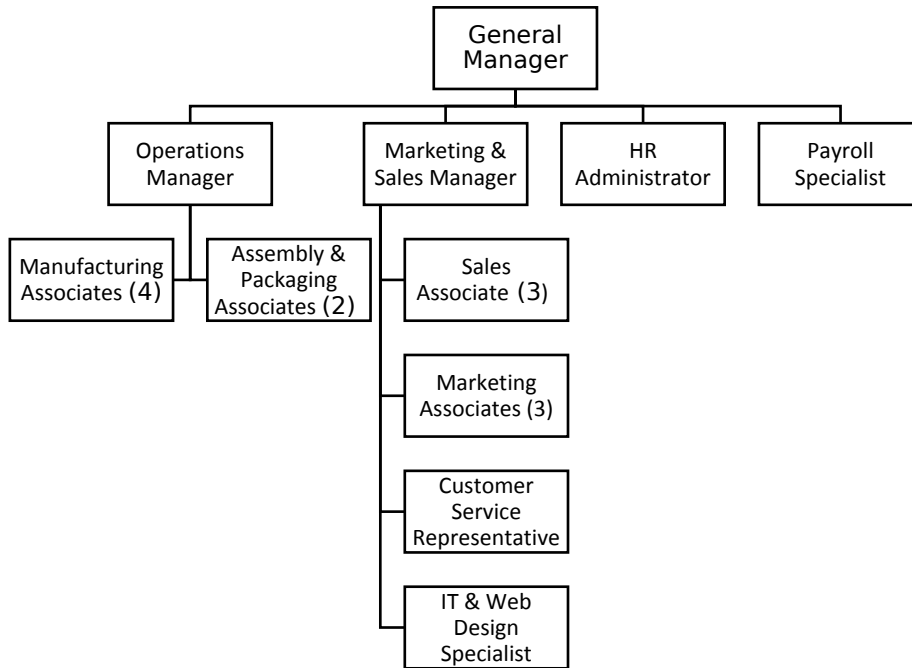
**Business Strategy:** Since our company is creating a new type of free weight, we will be using a differentiation strategy. The free-weight will be designed using weight distribution to isolate the forearm. Our product not only performs differently than anything on the market, but it also boasts a distinctive appearance, featuring an 'Upside-Down' U-shape.

**Business Location:** Our warehouse and office space will be located in Allentown, Pennsylvania. This location provides excellent market access due to its proximity to major U.S. cities, including Philadelphia, Washington D.C., and New York. Allentown is just about 75 minutes from the Port of Philadelphia , where we will be receiving our pig iron in the Packer Avenue Marine Terminal.

**Outsourced Functions:** Our company will be outsourcing accounting services and our materials used to make the free-weight product. Since we are outsourcing accounting, and not paying a salary to an accountant in the office, we will be able to reduce labor costs and increase productivity due to the outside expertise that outsourcing provides. We source our raw materials, including pig iron ore from Africa and the rubber grip from Missouri, from some of the best suppliers available.

**Financial Performance:** Financially, 4-Arm Inc. is expected to produce high cash figures due to the high amount of equity in the company. We plan to put \$2,000,000 into short-term investments each year, which will allow the company to gain an additional \$106,800 in interest earnings each year.

Exhibit 1: Organizational Chart 4-Arm Inc. 12/31/2024



\* In year 3, we plan to hire an additional Sales Associate, 1 Manufacturing Associate, 1 Assembly and Packaging Associate

\* In year 5, we plan to hire 1 Customer Service Representative

Exhibit 2: Pay, mandatory deductions, benefits, knowledge, skills, abilities, and motivation table.

Team Name: 4-Arm			YEAR 2	Section 4	Team 6					Date (10/10/2023)						
Compensation						Mandatory Payroll Deductions					Benefits					
Position (Salary/Wage - W) (Full-time Assumed, Part-time - PT %)	Salary or Wage for position)	Bonus or Commission	# for position	Projected End of Year 2 Salary or Wage including bonus/comm. Each	Projected End of Year 2 Salary or Wage including bonus/comm. all positions	FICA	FUTA*	SUTA	WC	Mandatory Deductions - Total	Benefits - Health Cost	Benefits - Retirement Cost	Benefits - Any other Benefit Cost	Benefits - Total	Total Cost per Employee	Total Cost for All Employees
General Manager	150000	20987	1	170987	170987	13081	42	3510	200	16833	23004	10259.22	2600	35,863	223,683	223,683
Operations Manager	85000	9987	1	94987	94987	7267	42	3510	300	11119	23004	5699	2600	31,303	137,409	137,409
Marketing and Sales Manager	85000	9987	1	94987	94987	7267	42	3510	200	11019	23004	5699	2600	31,303	137,309	137,309
Sales Associates	35000	35278	3	70278	210834	16129	126	10530	200	26985	69012	12650	7800	89,462	109,094	327,281
Payroll Specialist	50000	4737	1	54737	54737	4187	42	3510	200	7939	23004	3284	2600	28,888	91,565	91,565
IT Specialist	50000	4737	1	54737	54737	4187	42	3510	150	7889	23004	3284	2600	28,888	91,515	91,515
HR admin	50000	4737	1	54737	54737	4187	42	3510	150	7889	23004	3284	2600	28,888	91,515	91,515
Manufacturing Associates	55000	5062	4	60062	240248	18379	168	14040	600	33187	92016	14414.88	10400	116,831	97,566	390,266
Assembly and package	55000	5062	2	60062	120124	9189	84	7020	450	16743	46008	7207	5200	58,415	97,641	195,283
Marketing Associates	45000	4412	3	49412	148236	11340	126	10530	150	22146	69012	8894	7800	85,706	85,363	256,088
Customer Service Rep	45000	4412	1	49412	49412	3780	42	3510	150	7482	23004	2965	2600	28,569	85,463	85,463
<b>Totals</b>			<b>19</b>		<b>1,294,026</b>	<b>98,993</b>	<b>798</b>	<b>66,690</b>	<b>5,700</b>	<b>169,231</b>	<b>437,076</b>	<b>77,642</b>	<b>49,400</b>	<b>564,118</b>	<b>1,162,658</b>	<b>1,941,912</b>

Manufacturing Associates	Quality Control, Manual Dexterity, Attention to Detail	All manufacturing employees will go through deep background checks and have quarterly meetings with the operations manager to discuss safety concerns and continued safety training for each employee in the factory.
Assembly and Packaging Associates	Time Management, Quality Control, Dependability	All assembly and packaging employees will have quarterly meetings with the operation manager to discuss efficiency and effectiveness in the factory.
IT Specialist	Technical Knowledge, Problem Solving, Continuous Learning	In the interview we would prefer an IT specialist with much experience as they are the only member of the team. Frequent feedback between IT and the Marketing manager to ensure all advertising is visible to consumers on the website.
Operations Manager	Leadership, Team Management, Problem Solving	The operations manager should have a strong background in factory work. They will be meeting with all the employees who work on the factory line to constantly receive feedback to improve the teamwork within the company.

We are motivating our employees through our high wages and benefits. Some of our benefits include premium family insurance, and money to be used for childcare. The general manager receives a 14% bonus, all managers receive 11%, specialists receive 8%, all other employees receive 8.5%. Sales associates receive 5% of 40% of their total sale cost. Our company offers all major American holidays, and we offer 12 additional vacation days along with 8 sick days for each employee. \*WC and health cost is a quote from Brown and Brown Insurance

Exhibit 3: Market Segmentation Analysis/Target Market Selection

Target Name	Size of Market (Persons)	Projected Growth	Description of Market
<b>At-Home Gym Market (20 to 34)</b>	6,206,822 (Extrapolation of the At-Home Fitness Market using Working Age Population (FRED, 2023) multiplied by adults who have access to an at home gym (Goodwin, 2023) multiplied by percentage of US population within 20 to 34 age bracket (U.S. Census, 2023))	3% in 5 years (calculated by using 2020-22 wholesale consumer home gym market CAGR (SFIA, 2023))	<p><b>Demographic:</b> American and Canadian adults aged 20 through 34, who have access to a home gym.</p> <p><b>Geographic:</b> Within the United States and Canada</p> <p><b>Psychographic:</b> This segment is particularly fond of purchasing products via social media; as over half of shoppers aged 18-25 have purchased something online (Chevalier, 2023).</p> <p><b>Behavioristic:</b> One benefit that our product brings to this market is the cost-saving function of having free weights at home. This segment is particularly price sensitive (Ruff, 2019). Given the cost-sensitivity of this market, we would tailor our advertising to highlight the low price relative to alternative products.</p>
<b>At-Home Gym Market (35 to 54)</b>	7,655,992 (Extrapolation of the At-Home Fitness Market using Working Age Population (FRED, 2023) multiplied by adults who have access to an at home gym (Goodwin, 2023) multiplied by percentage of US population within 35 to 54 age bracket (U.S. Census, 2023))	3% in 5 years (calculated by using 2020-22 wholesale consumer home gym market CAGR (SFIA, 2023))	<p><b>Demographic:</b> American and Canadian adults aged 35 to 54, who have access to a home gym.</p> <p><b>Geographic:</b> Within the United States and Canada</p> <p><b>Psychographic:</b> This demographic may be more focused on the longevity benefits of weightlifting, as a survey of weightlifters found that persons aged 41 and over were more motivated about concerns of vitality (Larsen, 2021).</p> <p><b>Behavioristic:</b> The key benefit that users within this age range receive is reduced time spent commuting, as they may no longer need to visit a commercial gym. We would highlight the utility of adding this to their home gym.</p>

Exhibit 4: Market Quantification

Quantifier	Year 1	Year 2	Year 3	Year 4	Year 5
Sales	130,131 X \$29.99 = \$4,172,538	141,913 X \$29.99 = \$4,255,970	144,893 X \$34.99 = \$5,069,816	144,008 X 34.99 = \$5,178,800	151,235 X 34.99 = \$5,291,713
Price	\$29.99	\$29.99	\$34.99	\$34.99	\$34.99
Average Purchase	0.2	0.2	0.2	0.2	0.2
Units	139,131	141,913	144,893	148,008	151,235

Total Market Demand

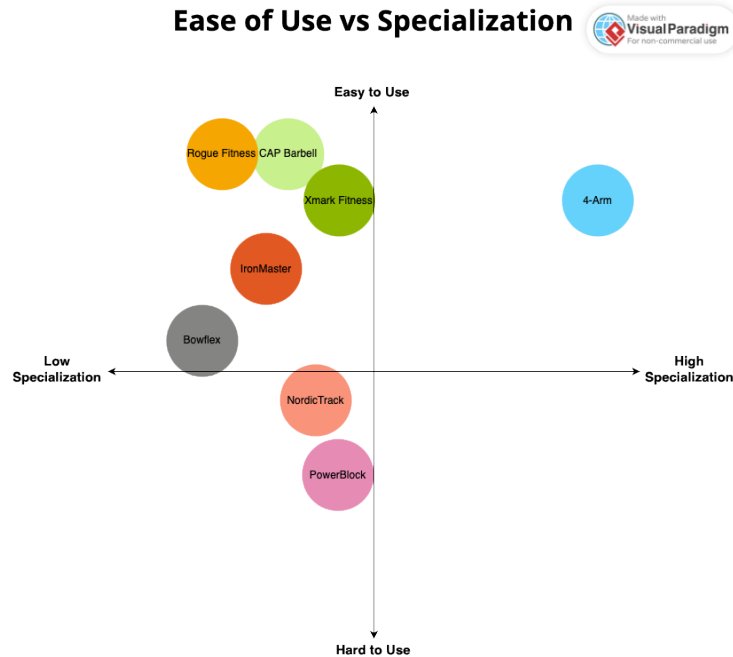
- Assuming no change in the marketing environment, the total free weight market demand was \$239.8M in 2023 (O'Malley, 2023).
- Startups can expect to capture 2.86% of the market share for free weights (Bizminer Industry Market Profile, 2023)
- In the interest of providing a conservative estimate, we halved 2.86% to roughly 1.43% of market share in Y1 (Bizminer Industry Market Profile, 2023).
- By launching sales in the Canadian market, we project an increase in our market share corresponding to approximately 21.5%, giving our company market share of 1.74% for Y1 (Pargas, 2023).
- Finally, using the Revenue CAGR table within the IBIS World report, we projected our unit sales to closely follow the industry CAGR revenue projections throughout the 2020s (O'Malley, 2023, p.10).
- We project a CAGR of unit sales of 2.11% over from Y1 to Y5, using the calculation below.

$$CAGR = \left( \frac{Y5 \text{ Unit Sales}}{Y1 \text{ Unit Sales}} \right)^{\frac{1}{4}} - 1$$



## Exhibit 5: Positioning/Competitive Analysis

### Positioning



**Positioning Statement:** At 4-Arm Inc., we are focused on maximizing the specialization factor of free-weight while at the same time maximizing the ease of use for our consumers. For those who are just beginning their fitness journey, a free weight that is easy to understand will be more beneficial. For those who are finding it difficult to target a specific muscle, in this case the forearm muscle, our free-weight specializes in targeting that one muscle.

### Competitive Analysis



#### BowFlex

BowFlex offers a high-end adjustable dumbbell with weight options ranging from 5lbs to 52.5lbs. They charge \$429 for a pair of these dumbbells, and they also have another option with weight ranging from 10lbs to 90lbs for \$799.



#### PowerBlock

PowerBlock offers a uniquely shaped adjustable dumbbell, but it has the same function as the others. Their smallest option can be used at 4lbs up to 32lbs and is \$339 for a pair.



#### CAP

CAP offers the standard hexagon shaped dumbbell that comes in multiple weight options. The price per pound for these dumbbells comes in at roughly \$1.40 per pound.



#### Ironmaster

Ironmaster offers another high-end adjustable dumbbell that ranges from 5lbs to 75lbs for \$698. They also offer heavier options for higher prices.

Exhibit 6: Marketing Mix

**Product/Service Branding** – Our company name, 4-Arm Inc., highlights the perceived benefits of our product. Our motto, “Grip your Greatness”, expresses an increase in grip strength from the use of our product. The overall message of our brand is meant to showcase the possible advantages of including our product in one's workout regimen. The core customer value of our product is the 4-Arm's ability to increase grip strength and forearm muscle growth. Because more than 57% of our survey respondents reported a lack of targeted equipment for the forearm muscle, we made sure to emphasize the core customer desires and or needs of our products when considering branding.

**Pricing Strategy**

Our pricing objective will primarily be market share. We chose this strategy because our competitors typically price cast iron dumbbells at less affordable prices (ranging from around \$29.99-65.00), and our price point communicates that our product can be innovative as well as affordable compared to competing products in the market. Because our price is affordable, it will align with our target market of young adults/college students who typically don't have the funding to purchase high-quality at-home fitness equipment.

Fixed Costs (per year)	Variable Cost per unit	Selling Price	Break even units sold for year
\$87,500	\$7.98	\$29.99	3,976

**Place (Distribution) Strategy**

We will primarily be selling B2C through the means of direct and indirect channels. Our online store will contain the bulk of the sales. Additionally, 4-Arm will be sold at locations including but not limited to: Walmart, Dicks Sporting Goods, and Target. Our location in Allentown, PA, is within close range of our major distributors' facilities (Amazon, Target, Walmart).

**Promotional Strategy (IMC)**

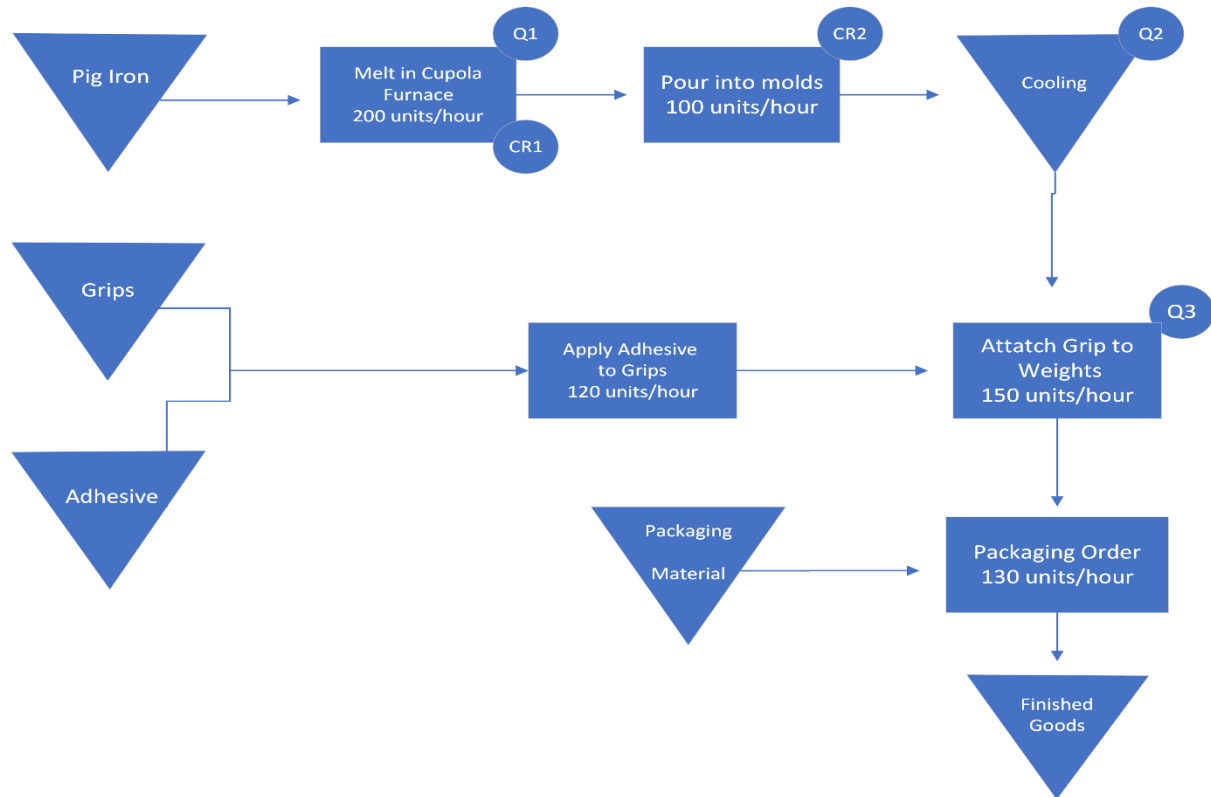
The main goal of our promotional strategy is to advertise through social and digital media. We decided to cater towards this because, Gen Z, a big portion of our target market has been shaped and developed by “the digital age” due to all of us growing up with the internet being easily accessible. To continue, 63% of Gen Z shoppers have purchased a product seen on social media which highlights a large potential for market growth, while keeping advertising costs into consideration. For our promotional mix, we decided that mobile marketing will be the most effective source of advertising. With our target segments' ages ranging from the early 20s to their mid-40s, mobile social media will be our leading advertisement. Individuals aged between 18 and 29 account for 88% of all social media use. People aged between 37 and 49 are the primary users of Facebook (Schaffer). We will direct our Facebook advertisements to the older portion of the target market while focusing on Instagram, Snapchat, and TikTok for the younger demographic. We will also be giving our product to fitness influencers for free and paying them to promote our product on whichever platform they use. This could be any social media platform or on their YouTube channel. Most YouTube users are between 18 and 29 years of age (Schaffer). Social media is one of the best marketing strategies and we think that it will be the most effective way to advertise our product.

Promotional Strategy	2023	2024	2025	2026	2027
Online Advertisement (85%)	\$217,844	\$222,200	\$226,866	\$231,404	\$235,569
Conventions (5%)	\$12,814	\$13,071	\$13,345	\$13,612	\$13,857
Sponsorships (5%)	\$12,814	\$13,071	\$13,345	\$13,612	\$13,857
Print Advertisement (5%)	\$12,814	\$13,071	\$13,345	\$13,612	\$13,857
<b>Total IMC Promotional</b>	<b>\$256,286</b>	<b>\$261,413</b>	<b>\$266,901</b>	<b>\$272,240</b>	<b>\$277,140</b>

Facebook (25% of Advertising Online)	\$44,850
Instagram (30% of Advertising Online)	\$53,820
YouTube (30% of Advertising Online)	\$53,820
TikTok (15% of Advertising Online)	\$26,910



Exhibit 7: Flow Chart



For each major quality step:

Quality Step	What is measured?	How often?	How will you ensure quality?
Q1	Iron melting thoroughly	Every batch	Using a metal/rubber pole to stir and feel for clumps
Q2	Cool in mold thoroughly	Every 10 <sup>th</sup> molds	Temperature guns and eye inspection for air bubbles
Q3	Grip Adhesion successful	Every 10 <sup>th</sup> grips	Friction tests on grips through use of 70+ lbs. of force
Q4	No defect in Grips delivered	5% of grips	Visual test for tears/rips or any noticeable defect

For each critical resource:

Critical Resource	Brief Description	Unit Cost (in appropriate unit)	How many?
CR1	Cupola Furnace	\$125,000	2
CR2	Unique Free-weight molds	\$125	800

Briefly describe your main facility - provide information about layout and dimensions. 15,000 sq ft. Foundry with loading dock and ceiling ventilation. Cupola Furnaces are in the main room (6,500 sq ft) where ventilation is located. Loading docks connected to cupola furnace location for efficiency. Cooling racks and molding center located adjacent to cupola furnaces (4,000 sq ft). Assembly and packaging located in non-ventilated area with forklift for transport to loading dock (2,000 sq ft). Office space located behind assembly and packaging in 2,000sq ft area designated with several offices.

Exhibit 8: Quality Assurance

Indicate the Dimensions of Quality on which you will focus.	Why is this dimension important, given your industry & target market?	Identify the Quality Step(s) on the Process Flowchart / Service Blueprint to which this corresponds.
Special Features	4-Arm special features include the specialization factors in targeting the forearm muscle. 4-Arm also provides removable plates for a great convenience feature for our consumers.	Cooling and Molding
Durability	Consumers want a durable free weight that lasts several years without failure. Maintaining structural safety is vital for 4-Arm to prevent user injury from a break in the metal.	Cooling and Molding Process/melting process
Aesthetics	4-Arm aesthetics refers to its high-quality cast iron, supportive rubber grip, and unique shape. Consumers value Aesthetics in personal gym equipment.	Grip Assembly and Finished goods inspection

Use the space below to describe any additional Proactive Quality Assurance Plans that are not connected to a specific activity on your Process Flowchart / Service Blueprint.

Ensuring quality metal workers are hired and trained properly, as well as our assembly line workers. Incentive plans will be implemented to ensure quality among production and incentivize consistent quality. Additional plans will be made for "4-Arm Inc." to maintain positive relationships with our suppliers and distributors

Describe any reactive quality assurance plans. Include a recovery plan should a customer receive poor quality goods and/or services.

If a customer reports any defect with the finished goods, we will reach out to the affected consumer to replace the defected product. Additionally in this process, we will reference the

affected consumers' product number with its corresponding batch, to ensure the rest of the batch is not defective. If in the case that the batch has more defects, we will issue a recall for all consumers who purchased the product in that batch.

If you will utilize a quality/process improvement methodology, indicate which:

NA       TQM       Six Sigma       ISO       Benchmarking

Provide a specific explanation of how your chosen quality methodology relates to your business and how it will be applied:

We are choosing to use Six Sigma as our quality control method because it allows us to make multiple checks throughout the production process to see if our product has any defects. Since we use a lot of our products from other suppliers, we must be constantly examining our product. We will focus tests during the iron melting process, as we are aiming to reduce variation and eventually reduce costs.

Exhibit 9: Inventory, Suppliers & Distribution

**RAW MATERIAL INVENTORY & SUPPLIER SELECTION**

Item(s)	Supplier Name & Location	Reason for selecting this supplier	Supplier lead time (in days)	Frequency of replenishment (in days)	System of Management	Mode(s) of Transportation
Pig Iron Ore	Miller and Company: Canada/South Africa	High quality iron, shipped into local port, great service.	30	7	Fixed Order Interval	<input checked="" type="checkbox"/> Highway <input type="checkbox"/> Rail <input checked="" type="checkbox"/> Waterway <input type="checkbox"/> Air
Silicon	Panadyne located in Montgomeryville, Pennsylvania	High Quality Silicon, Located in PA, Competitive Price	14	60	Fixed Order Interval	<input checked="" type="checkbox"/> Highway <input type="checkbox"/> Rail <input type="checkbox"/> Waterway <input type="checkbox"/> Air
Rubber Grip	Grip Works located in Arnold, Missouri	Finger grooves, competitive price	1-3	30	Fixed Order Interval	<input checked="" type="checkbox"/> Highway <input type="checkbox"/> Rail <input type="checkbox"/> Waterway <input type="checkbox"/> Air
Manganese	Reade Advanced Materials located in East Providence, Rhode Island	High concentrated Manganese, located NE USA	14	90	Fixed Order Interval	<input checked="" type="checkbox"/> Highway <input type="checkbox"/> Rail <input type="checkbox"/> Waterway <input type="checkbox"/> Air
Cyanoacrylate Based Glue	East Glue located in New Milford, Connecticut	Wholesaling deal, fast lead time, fast shipping	2-3	180	Fixed Order Interval	<input checked="" type="checkbox"/> Highway <input type="checkbox"/> Rail <input type="checkbox"/> Waterway <input type="checkbox"/> Air

**FINISHED GOODS INVENTORY**

	Finished goods produced (per hour)	Frequency of shipping finished goods	Average level of Finished goods inventory on site	Amount of safety stock on site
At the end of Year 1	72 (139,131/1,952hrs)	Twice a week	720 ((72 x 20hrs)/2)	6,957 (5% of annual demand)
At the end of Year 2	73	Twice a week	730	7,096
At the end of Year 3	75	Once a Day	750	7,245 (5% of annual demand)

At the end of Year 4	76	Once a Day	760	7,401 (5% of annual demand)
At the end of Year 5	78	Once a Day	780	7,562 (5% of annual demand)

What is the lifespan of your finished goods inventory?	<input type="checkbox"/> NA	12 years
How will you manage perishability of Finished Goods Inventory?	<input checked="" type="checkbox"/> NA	

Name of transportation provider/carrier	Reason(s) for selecting this provider/carrier	Frequency of Pick Up / Drop off
Watson Town Trucking Company (Our foundry to distributor)	5 facilities located in Pennsylvania, committed to reducing environmental impact	Twice every week for the first 2 years then once a day following

**DISTRIBUTION**



Exhibit 10: Capacity

	Demand (per hour)	Capacity (per hour)	Utilization (%)	Hours of Operation	Bottleneck name and description	How will you manage /adjust the bottleneck to ensure you can appropriately serve or supply your customers?
At the end of Year 1	71.3	100	71.3%	8	Pouring into molds/cooling	Training employees to handle mold efficiently. Consistent equipment quality checks.
At the end of Year 2	72.7	100	72.7%	8	Pouring into molds/cooling	Training employees to handle mold efficiently. Consistent equipment quality checks.
At the end of Year 3	74.3	100	74.3%	8	Pouring into molds/cooling	Training employees to handle mold efficiently. Consistent equipment quality checks.
At the end of Year 4	75.9	120	63.3%	8	Grip Adhesion	Set procedure on how to apply adhesion efficiently
At the end of Year 5	77.5	120	64.6%	8	Grip Adhesion	Set procedure on how to apply adhesion efficiently

Show your calculations for the following parameters at the end of Year 1.

Hours of operation/month	Demand/month	Demand/hour	Capacity/month	Capacity/hour	Utilization
163 ((244 days / 12months) x 8hrs )	11,622 (163hrs x 71.3 demand/hr)	71.3 (139,131 demand / 1,952 hrs/yr)	16,300 (100 x 163)	100 (4 manufacturing associates x 25 molds/hr)	71.3% ((71.3/100) x 100%)

**Additional resources (beyond your bottleneck) must be allocated appropriately to support operations. Identify which resources have a significant impact on capacity at start up and describe why these are appropriate amounts of resources at start up.**

The size of our cupola furnace will heavily dictate our production capacity, as its throughput range is 10-1000+ units per hour depending on the size of the furnace purchased. The furnace must be large enough to be able to meet the daily production demand, while not being too big as to where we could have saved money by going with a smaller furnace.

**Describe adjustments you will make as resource requirements vary with time. Be specific regarding which key resources (beyond your bottleneck) will be adjusted, when and how. If you will make multiple adjustments, explain each.**

As our demand increases, in year 3 we hire 1 additional manufacturing associate, and 1 additional assembly/packaging associate, and assign more manufacturing associates to the cooling/molding process. Additionally, to meet this increase in the cooling/molding capacity, we will purchase 800 additional molds at the end of year 3.

**How will you manage seasonality?** *If your organization does not have seasonal demand, please check this box:*

## Exhibit 11: Income Statement

	December 31, 2023	December 31, 2024	December 31, 2025	December 31, 2026	December 31, 2027
<b>4-Arm Income Statement</b>					
<b>Sales Revenue</b>	<b>\$4,172,538</b>	<b>\$4,255,970</b>	<b>\$5,069,816</b>	<b>\$5,178,800</b>	<b>\$5,291,713</b>
Less: Costs of Goods Sold	(1,135,265)	(1,157,465)	(1,181,254)	(1,206,111)	(1,231,855)
Add: Interest Earnings	106,800	106,800	106,800	106,800	106,800
<b>Gross Profit</b>	<b>\$3,144,073</b>	<b>\$3,205,305</b>	<b>\$3,995,362</b>	<b>\$4,079,489</b>	<b>\$4,166,658</b>
<b>General and Administrative Expenses</b>					
Salaries and Wages	\$1,153,191	\$1,188,192	1,410,482	\$1,417,198	\$1,476,290
Payroll Tax Expenses	160,303	169,231	185,524	185,524	192,857
Employee Benefits and Retirement	534,297	564,118	652,354	652,354	680,900
Commissions Expense	83,451	85,119	101,396	103,576	105,836
Fire Insurance Expense	6,000	6,000	6,120	6,120	6,242
Depreciation Expense	31,000	62,000	62,000	62,000	62,000
Website Expense	6,320	3,320	3,320	3,320	3,320
Advertising and Promotion Expense	256,286	261,413	266,901	272,240	277,140
Marketing Research and Development Expense	15,000	15,000	20,000	25,000	25,000
Licenses	500	500	500	500	500
Office Expense	5,000	5,000	5,250	5,250	5,250
Machine and Equipment Maintenance Expense	10,500	10,500	13,500	13,500	13,500
Other - Utilities	175,000	175,000	180,250	183,855	183,855
Travel, Entertainment Expense	20,000	30,000	40,000	50,000	60,000
Mortgage Expense	105,444	105,444	105,444	105,444	105,444
Set up Corporation Costs	5,000	-	-	-	-
Accounting (outsourcing)	54,000	54,000	54,000	54,000	54,000
Loan Payment	220,000	220,000	220,000	220,000	220,000
<b>Total General &amp; Administrative Expenses</b>	<b>\$2,841,292</b>	<b>\$2,954,837</b>	<b>\$3,327,041</b>	<b>\$3,359,881</b>	<b>\$3,472,134</b>
<b>Earnings Before Interest and Taxes</b>	<b>\$302,781</b>	<b>\$250,468</b>	<b>\$668,321</b>	<b>\$719,608</b>	<b>\$694,524</b>
Interest Expense (Mortgage and Loan Interest)	187,875	164,134	139,053	112,514	84,399
<b>Earnings Before Taxes</b>	<b>\$114,906</b>	<b>\$86,334</b>	<b>\$529,268</b>	<b>\$607,094</b>	<b>\$610,125</b>
Income Tax Expense	10,330	7,330	42,289	48,507	45,698
<b>Net Income (Loss)</b>	<b>\$104,576</b>	<b>\$79,004</b>	<b>\$486,980</b>	<b>\$558,587</b>	<b>\$564,427</b>

Exhibit 12: Balance Sheet

<b>4-Arm Balance Sheet</b>	As of Inception Date	December 31, 2023	December 31, 2024	December 31, 2025	December 31, 2026	December 31, 2027
<b>ASSETS</b>						
Current Assets						
Cash and Cash Equivalents	\$3,864,525	\$1,697,682	\$1,612,971	\$1,455,311	1,478,155	1,453,202
Accounts Receivable	-	347,712	354,664	422,487	431,570	440,976
Inventory	-	61,262	62,452	63,800	65,125	66,569
Short Term Investments	-	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
<b>Total Current Assets</b>	<b>\$3,864,525</b>	<b>\$4,106,656</b>	<b>\$4,030,087</b>	<b>\$3,941,598</b>	<b>\$3,974,850</b>	<b>\$3,960,747</b>
Fixed (Long-Term) Assets						
Machinery and Equipment	350,000	350,000	350,000	450,000	450,000	450,000
Buildings	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Land	35,475	35,475	35,475	35,475	35,475	35,475
<b>Total Gross Fixed Assets</b>	<b>\$1,635,475</b>	<b>\$1,635,475</b>	<b>\$1,635,475</b>	<b>\$1,735,475</b>	<b>\$1,735,475</b>	<b>\$1,735,475</b>
Less: Accumulated Depreciation	-	(31,000)	(93,000)	(155,000)	(217,000)	(279,000)
<b>Net Fixed Assets</b>	<b>\$1,635,475</b>	<b>\$1,604,475</b>	<b>\$1,542,475</b>	<b>\$1,580,475</b>	<b>\$1,518,475</b>	<b>\$1,456,475</b>
Other Long Term Assets						
Long Term Investments						
Intangibles, Net of Amortization	-	-	-	-	-	-
<b>Total Other Long Term Assets</b>	<b>\$-</b>	<b>\$-</b>	<b>\$-</b>	<b>\$-</b>	<b>\$-</b>	<b>\$-</b>
<b>Total Assets</b>	<b>\$5,500,000</b>	<b>\$5,711,131</b>	<b>\$5,572,562</b>	<b>\$5,522,073</b>	<b>\$5,493,325</b>	<b>\$5,417,222</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>						
<b>Liabilities</b>						
Current Liabilities						
Accounts Payable	-	53,363	54,385	55,542	72,931	89,743
Accrued Salaries and Wages	-	46,128	47,528	56,419	56,688	59,052
Accrued Payroll Taxes and Benefits	-	7,064	7,069	9,552	9,559	9,854
Current Maturity of LT Debt	-	220,000	220,000	220,000	220,000	-
<b>Total Current Liabilities</b>	<b>\$-</b>	<b>\$326,555</b>	<b>\$328,982</b>	<b>\$341,513</b>	<b>\$359,178</b>	<b>\$158,649</b>
Long-Term Liabilities						
LT Debt Less Current Maturities <sup>1</sup>	\$1,100,000	\$880,000	\$660,000	\$440,000	\$220,000	\$220,000
<b>Total Liabilities</b>	<b>\$1,100,000</b>	<b>\$1,206,555</b>	<b>\$988,982</b>	<b>\$781,513</b>	<b>\$579,178</b>	<b>\$378,649</b>
<b>STOCKHOLDER'S EQUITY</b>						
Common Stock	4,400,000	4,400,000	4,400,000	4,400,000	4,400,000	4,400,000
Retained Earnings	-	104,576	183,580	340,560	514,147	638,574
<b>Total Stockholders' Equity</b>	<b>\$4,400,000</b>	<b>\$4,504,576</b>	<b>\$4,583,580</b>	<b>\$4,740,560</b>	<b>\$4,914,147</b>	<b>\$5,038,574</b>
<b>Total Liabilities and Stockholders' Equity</b>	<b>\$5,500,000</b>	<b>\$5,711,131</b>	<b>\$5,572,562</b>	<b>\$5,522,073</b>	<b>\$5,493,325</b>	<b>\$5,417,222</b>

Exhibit 13: Cash Flow Statement

<b>4-Arm Statement of Cash Flows</b>	December 31, 2023	December 31, 2024	December 31, 2025	December 31, 2026	December 31, 2027
Cash Flows From (For) Operations					
<b>Net Income</b>	<b>\$104,576</b>	<b>\$79,004</b>	<b>\$486,980</b>	<b>\$558,587</b>	<b>\$564,427</b>
Depreciation	31,000	62,000	62,000	62,000	62,000
Changes in Current Assets					
Accounts Receivable	(347,712)	(6,952)	(67,823)	(9,083)	(9,406)
Inventory	(61,262)	(1,190)	(1,348)	(1,325)	(1,444)
Changes in Current Liabilities					
Accounts Payable	53,363	1,022	1,157	17,389	16,812
Accrued Salaries and Wages	46,128	1,400	8,892	269	2,364
Accrued Payroll Taxes and Benefits	7,064	5	2,483	7	295
<b>Cash From (For) Operating Activities</b>	<b>\$(166,843)</b>	<b>\$135,290</b>	<b>\$492,340</b>	<b>\$627,844</b>	<b>\$635,048</b>
<b>Cash Flow (For) From Investing Activities</b>					
Fixed Asset Purchases	(1,635,475)	-	(100,000)	-	-
Short Term Investments	(2,000,000)	-	-	-	-
<b>Net Cash Flows (For) From Investing</b>	<b>\$(3,635,475)</b>	<b>\$-</b>	<b>\$(100,000)</b>	<b>\$-</b>	<b>\$-</b>
<b>Cash Flow From (For) Financing Activities</b>					
Issuance of Common Stock	<b>\$4,400,000</b>	<b>\$-</b>	<b>\$-</b>	<b>\$-</b>	<b>\$-</b>
Long Term Debt Borrowings	1,100,000	-	-	-	-
Long Term Debt Payments	-	(220,000)	(220,000)	(220,000)	(220,000)
Dividends Paid to Stockholders	-	-	(330,000)	(385,000)	(440,000)
<b>Cash Flows From (For) Financing</b>	<b>\$5,500,000</b>	<b>\$(220,000)</b>	<b>\$(550,000)</b>	<b>\$(605,000)</b>	<b>\$(660,000)</b>
<b>Net Change in Cash</b>	<b>\$1,697,682</b>	<b>\$(84,710)</b>	<b>\$(157,660)</b>	<b>\$22,844</b>	<b>\$(24,952)</b>
<b>Beginning Cash Balance</b>	<b>\$-</b>	<b>\$1,697,682</b>	<b>\$1,612,971</b>	<b>\$1,455,311</b>	<b>\$1,478,155</b>
<b>Net Change in Cash</b>	<b>\$1,697,682</b>	<b>\$(84,710)</b>	<b>\$(157,660)</b>	<b>\$22,844</b>	<b>\$(24,952)</b>
<b>Ending Cash Balance</b>	<b>\$1,697,682</b>	<b>\$1,612,971</b>	<b>\$1,455,311</b>	<b>\$1,478,155</b>	<b>\$1,453,202</b>

## Exhibit 14: Financial Statement Notes

- Sales Revenue was generated from exhibit 4
- COGS only consists of materials (7.98 variable cost and a fixed cost of 25,000)
- Salary and wages were retrieved from exhibit 2.
- All employees will receive a 5% raise in year 3, a 5.5% raise from their original salary in year 4, and a 6% raise in their original salary in year 5.
- Payroll and benefits were retrieved from exhibit 2.
- Commission expense is calculated as 5% from 40% of total sales and then multiplied by number of sales associates.
- We have a fire insurance expense for our corporation of \$6000 and it increases each year to account for inflation.
- Salary and Wage expenses exclude commission for sales associates.
- Interest Earning is based on the 90-day T- bill rate of 5.34%
- Advertising and Promotion expense is based on 6.14% of sales revenue in years 1 and 2 and then 5% in years 3,4, and 5.
- Our company uses straight-line depreciation.
- Our licenses require renewal every year of \$500.
- Mortgage rate is 7.533%
- PA corporate income tax is 8.99% and will decrease by 0.5% each year until it reaches 4.99%
- We anticipate that 100% of sales will be on credit and 1 month of sales will be outstanding.
- Depreciation is ½ in the first year.
- We anticipate having 50% of inventory be the accounts payable balance at year-end for years 1-3 and then 75% in years 4 and 5.
- Accrued salary and wages will be based on 4% of annual salary as our employees are paid on the 1<sup>st</sup> and 15<sup>th</sup> of every month.
- Accrued payroll and benefits will be based on 4% of the annual salary as our employees are paid on the 1<sup>st</sup> and 15<sup>th</sup> of every month.
- Issuing of common stock is made at the beginning of year 1.
- We plan to have long-term investments in future years.
- Utilities increase by 3% in year 3, and an additional 2% in year 4 to account for inflation.
- Interest on our loan of \$1,100,000 is 8.5% and it is compounded annually for 5 years.
- Office expenses increase in year 3 to account for inflation.
- 10% of office expense is accounts payable.
- Before year 1 the company plans to take out a \$1,100,000 5-year loan with an 8.5% interest rate
- In year 5 we will begin to accrue 1 month's utilities bill
- 1 month of advertising expense will be in accounts payable.
- Machine and Equipment maintenance expense is 3% of the cost of the machine and equipment.
- 1 month of ME maintenance will be accounts payable.
- Travel and Entertainment expenses increase year by year to account for growth in the company.
- We will begin to pay dividends in year 3 starting at 30% of the 25% of the company the venture capital holds, and it rises by 5% each year.
- We will hire sales associates in year 1 before we are a B2B company as they will travel with us to conventions to demonstrate our product along with answering questions customers might have and other activities. We want them to grow and learn with us as a company to avoid any issues that may arise when we go B2B.
- 800 additional molds were bought in year 3 which is accounted for in increase in machine and equipment on the balance sheet.

Exhibit 15: Financial Ratios

	December 31, 2023	December 31, 2024	December 31, 2025	December 31, 2026	December 31, 2027	Industry Average Ratios
<b>Liquidity Ratios</b>						
Current Ratio	3.40	4.07	5.04	6.86	6.86	1.7
Quick Ratio	12.39	12.06	11.35	10.89	24.55	0.6
Operating Cycle	5.06	5.78	7.88	9.95	10.58	56.96
<b>Leverage Ratios</b>						
Debt/Equity	0.27	0.22	0.16	0.12	0.08	2.31
Times Interest Earned	1.78	1.90	5.25	6.95	8.96	7.03
<b>Asset Management Ratios</b>						
Inventory Turnover	37.06	18.71	18.71	18.71	18.71	0.9
Receivables Turnover	24.00	12.12	13.05	12.13	12.13	6.16
Fixed Asset Turnover	0.64	0.68	0.81	0.84	0.89	2.79
<b>Profitability Ratios</b>						
Gross Profit Margin	0.75	0.75	0.79	0.79	0.79	0.57
Operating Profit Margin	0.07	0.06	0.13	0.14	0.13	0.23
Return on Assets	0.02	0.01	0.09	0.10	0.10	0.04
<b>DuPont Analysis</b>						
Net Profit Margin	0.03	0.02	0.10	0.11	0.11	0.05
Total Asset Turnover	0.74	0.75	0.91	0.94	0.97	0.94
Equity Multiplier	1.26	1.24	1.19	1.14	1.10	2.3
Return on Equity	2.35%	1.74%	10.45%	11.57%	11.34%	11.34%

## Exhibit 16: Financial Analysis

### **Liquidity**

4-Arm Inc. maintains a current ratio that is high compared to the industry median. This is also the case for the quick ratio. As a company it may be beneficial to retrieve more debt in year 5 after we finish paying off our original loan. As a company it may be smart to move some of our business capital to a different area that might be profitable for our company.

The operating cycle is lower than the industry median in year 1, however in year 2 we can almost double the operating cycle time and each year after it rises closer and closer to the median. This low cycle time may indicate that there may be a higher risk involved for those looking to invest. If numbers continue to rise this should no longer be an issue

### **Financial Leverage**

Our company has a low debt/equity ratio as we are 80% equity funded by our investors and venture capitalists. In future years we hope to have some long term debt that will help lower our ratio to more like the industry average.

### **Asset Management**

The inventory turnover is much higher compared to the industry, but the fixed asset turnover is far below the industry median. This is something that management should take a deeper look at and see if we can fix assets management.

### **Profitability**

The company's gross profit margin exceeds the industry margin in all years, but it still is within a reasonable band around the industry average. The operating profit margin is below the industry average, which is a slight concern, but this margin grows each year we continue business, and we hope this trend will continue past the first 5 years of operation. Our return on assets is slightly above the industry average but is close enough where we as a company are not concerned about lowering it. In future years, the company expects to improve our manufacturing process, thereby driving costs down and improving profitability.

### **DuPont Analysis**

Our profit margin in years 1 and 2 are below the industry average but with the increase in price of our product we are able to double the industry average margin in years 3, 4, and 5. Total asset turnover and return on equity is nearly the same as in the industry average in years 3, 4, and 5. Only our equity multiplier is a bit low but we have hopes of raising it in the future.

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## Meet the Team - Section 4, Team 6

	<p>Cassie Thompson</p> <p>I am from Virginia Beach, VA, where I attended Cape Henry Collegiate. My major is Marketing, and also, I have a concentration in Professional Sales. Outside of the classroom, I am President-Elect of the Panhellenic Council, a member of Alpha Sigma Alpha, and an Officer of the Operation Smile club!</p>
	<p>Sarah DeLucia</p> <p>I am an accounting major with a computer information system minor from Toms River, New Jersey. Outside of academics I spend a lot of my time working at UREC. I am also a member of INCHAARG which is a fitness organization that works on making women feel more confident at the gym and I am a member of women in business.</p>
	<p>Jack Begeny</p> <p>I am from McLean, Virginia, and attended Gonzaga College High School. I am a Junior majoring in Marketing in the JMU Business Program. I am involved in Pi Sigma Epsilon, a business Fraternity, and the JMU Golf Club. Outside of school activities, I enjoy playing and watching any sport with my friends.</p>
	<p>Griffin Imlay</p> <p>I am from Alexandria, VA, and attended T.C. Williams High School. I am a third-year majoring in Computer Information Systems, and I am looking forward to developing my skillset in COB 300's integrative business course. I am actively serving as President of Madison Venture Group, and Treasurer of Acacia Fraternity. I enjoy physical fitness, golf, and basketball.</p>
	<p>Craig McCelland</p> <p>I am from Herndon, Virginia and attended Chantilly High School. I am currently pursuing a B.B.A in accounting through the College of Business. Outside of class, I serve as a brother in the Lamda Beta Chapter of the Kappa Delta Rho fraternity, I also enjoy working out, playing golf and basketball, and spending time with my family.</p>
	<p>Colton Johnson</p> <p>I am from Free Union, Virginia and I attended Western Albemarle High School. I transferred to James Madison University from Piedmont Virginia Community College after earning my associate degree in business administration. I am a Senior majoring in business management. Outside of school I enjoy working out and spending time with my friends and family.</p>
	<p>Christian De Cesare</p> <p>I am from Charlottesville, Virginia, and I attended Western Albemarle High School. I received my associate degree from Piedmont Virginia Community College, where I then transferred to James Madison University to pursue Business Management. Apart from my studies, I enjoy physical fitness through the means of weightlifting and various cardio activities.</p>

