Stutsman County

4-H CONSUMER CHOICES MEET
April 7, 2019

2019 Study Guides & Sample Classes

Junior Division (Ages 10 - 13)
Senior Division (Ages 14 - 18)

Insulated Jackets & Vests
Outdoor Backpacks
Smoothies

2019 Consumer Choices Study Guide
Junior and Senior
Insulated Jackets and Vests

Insulated jackets and vests provide a practical, fashionable approach to keeping warm during cold weather. Available at a variety of price levels, these garments are serviceable apparel for cold-weather sports as well as daily activities.

Insulation type, outer fabrics or shell materials, style details, features and construction affect warmth, quality and price. Weight and compressibility are important for any activity where you will be carrying the jacket in your pack. Determine your needs, including climate and activities, and shop carefully before you buy.

The main fabrics (the outer shell and the lining) have an effect on a jacket's or vest's performance in four primary ways: durability, weight, warmth and water resistance.

Insulation Materials

Most insulated garments are filled with water-resistant down or some type of synthetic fiberfill. The purpose of this layer is to trap air or body heat and prevent it from escaping. Still or dead air acts as an insulator to keep cold air out and keep in warm air. Thickness allows for more dead air space and, thus, increases warmth.

Down

Down is the undercoating of waterfowl. It provides the greatest amount of dead air space of any insulation material for its weight. A down pod consists of light, fluffy filaments that grow from one quill, or point. These filaments intertwine and mesh, forming air pockets that trap air. One ounce of goose down contains 23,000 pods and 2 million filaments.

The best-quality down comes from geese living in cold climates, especially China and other parts of Asia. Goose down has pods 1 to 2 inches in diameter, compared with %-inch pods in duck down. Although goose down is 10 to 12 percent more effective than duck down, its availability is limited.

Contrary to popular opinion, color has no effect on the insulation value, construction or quality of down.

Government regulations state that insulation material labeled as down must contain at least 80 percent down and no more than 20 percent feathers. More expensive mixes go as high as 85 percent down and 15 percent feathers. Feathers are less resilient (do not retain loft), which causes them to break and reduce the amount of dead air space.

Down's fill-power is a measure of its quality, loft and how long it will retain its firmness. The higher the fill-power, the higher the quality and the larger the down clusters. Larger down clusters will trap more air, giving it more insulating power. The higher the fill-power, (for example, 800 fill), the greater the loft provided by the down, and, therefore, the less down required to provide warmth.

Typically, a fill of 550 (1 ounce filling 550 cubic inches of space) or more is identified as "prime" down. A 550+ fill is sufficiently warm and light enough to be used in jackets intended for activities such as backpacking and climbing.

At the higher end of the scale, 800 to 900 fill down often is used for extremely lightweight and warm clothing. Recently, the high end of this spectrum has been pushed out by technologies that have increased the loft per weight of down to 1,100 fill.

Sometimes the term "Northern" down is used on labels. It does not indicate quality; all down comes from Northern climates (Wellman, 2016).

Properties of Down

- Lightest of any insulation and warmest for its weight (under the same conditions, polyester is 71 percent as effective, acetate is 44 percent as effective and wool is 32 percent as effective)
- Breathes, allowing moisture from the body to pass through and evaporate
- Resilient - compresses to a small area, springs back and retains loft
- Conforms to body shape without undesirable bulk
- Machine washable and dryable

Disadvantages of Down

- High cost
- Loss of insulating properties when wet; moisture causes down to mat or clump together, resulting in loss of loft and warmth
- Length of time required to dry
- Attracts dust through static electricity and may aggravate allergies
- Must be harvested from animals
- Leaks feathers when torn

Synthetic Fiberfill

Synthetic fiberfill materials provide good insulation properties. They consist of a batt or mat of synthetic fibers that are crimped or texturized and intermeshed to form a thick, fluffy mass of fiber. Polyester, acetate and olefin are used as fiberfill; however, polyester and olefin are the most desirable fibers for insulated vests and jackets. When used as insulation, these fibers are specially designed to form a thick, resilient fiber batt that traps air and provides warmth.

Properties of Polyester Fiberfill

- High resilience and loft
- Lightweight to provide warmth without weight and excess bulk
- Clean, odorless and nonallergenic
- Retains loft when wet; does not mat together or compress as much as down
- Relatively inexpensive
- Will not mildew
- Machine washable and dryable

Disadvantages of Polyester Fiberfill

- For equal warmth, polyester weighs more than down
- Less durable than down

Types of Fiberfill

Several companies manufacture polyester fiberfill for use in insulated garments. Some types require special mention.

Hollofil, marketed by DuPont, is a series of short, hollow fibers meshed together. The short fiber is more downlike in terms of loft, while the hollow structure reduces the weight.

For equal warmth or thickness, Hollofil is heavier than down but lighter than other polyester fiberfills. Hollofil is less stable than Needlepunch fiberfill batts and, like down, requires more quilting lines and compartments to keep the fiber from shifting in the garment. Of the two types of Hollofil available, Hollofil II has a special finish that increases cost but is more durable than the finish of Hollofil 808.

Quallofil, also marketed by DuPont, is designed to most closely duplicate down. It features four internal channels to increase thermal performance. Quallofil is known for its resiliency, softness, loft and ability to maintain 90 percent of its insulating qualities when completely saturated with water.

Hollofil II and **Quallofil** are coated with a waxlike finish that allows the fibers to separate and move freely when compressed and released. Manufacturers recommend that garments containing these insulators not be dry cleaned because the cleaning process will remove this coating.

Thinsulate, Thermolite, Texolite Plus and **Thermal** Rare examples of fiberfill products that provide warmth without the bulk of down or conventional polyester fiberfills. Thinsulate, 65 percent olefin/35 percent polyester, and Thermolite, 100 percent polyester, feature tiny microfibers blown to form a high-density web. The extremely fine fibers provide an increased surface area to trap air efficiently for insulation. Thermolite features an additional sheath that surrounds the microfiber core. The sheath melts during processing, interlocking it with core fibers. Texolite Plus and Thermal R feature metalized films combined with polyester fiberfill or foam. The films serve as reflective barriers to conserve energy. In addition, Thermal R offers windproof, breathable and nonallergenic properties. All of these insulationmaterials are of lightweight construction and retain warmth under damp, wet conditions. The reduced bulk provides for sleek designs in outerwear, with enhanced freedom of movement.

Needlepunch is not a brand name, but it is a type of polyester insulation material. The web structure is formed by interlacing many polyester fibers by punching with barbed needles. This creates a feltlike fabric that is warm, lightweight and inexpensive. This more compact material often is used in sleek, form-fitting skiwear or outerwear, with a minimum of quilting lines. Polyester fibers used in needlepunch construction are nonallergenic, machine washable and dry cleanable.

Treated or Hydrophobic Down

Down can be treated with a chemical water repellant. The polymer treatment helps water-resistant down handle dampness (REI, 2016).

Properties of Treated Down

- Resists moisture better than regular down
- Higher fill-power possible
- Ultralight like regular down
- Ultrawarm
- Ultrapackable with good compressibility

Disadvantages of Treated Down

- Higher cost than down
- Not completely waterproof
- Not recommended for use in prolonged periods of rain because it eventually will become saturated and clump
- Leaks feathers when torn

Down Fill-Power

Fill-power is a reference to the quality of the down insulation used. The number represents the amount of cubic inches 1 ounce of down occupies. For example, 1 ounce of 800 fill-power down will occupy 800 cubic inches when compressed by a standardized weight. If Jacket A has 2 ounces of 800 fill and Jacket B has 2 ounces of 700 fill, Jacket A will be warmer because it has more loft. However, a jacket may have 8 ounces of 850 fill down and yet be of similar warmth to a jacket with 12 ounces of 650 fill down. The jacket featuring 850 fill down has similar warmth but will weigh less and be more compressible because it has less down in it. Higher fill-power down allows for better warmth-to-weight ratios, but it is not always the definitive factor when considering warmth of a jacket (Wellman, 2016).

Traceable Down

Many companies are working to address concerns about where the down in their products comes from and assure buyers that the animals were well treated by using "traceable down" or "responsibly sourced down" to disclose their down sources and the harvesting practices of those sources (Wellman, 2016).

Outer Fabrics

When selecting an insulated jacket or vest, consider the fabric used on the outside and for the lining. Select a tightly woven water- and wind-resistant fabric for the outside layer. Water-repellent properties are less important in a vest, but wind resistance helps retain body heat and warmth. Abrasion resistance, high tear strength and easy care are other properties to consider. Garments using down filling or insulation should have down-proof (down pods will not poke through) outer fabrics. The following fabrics are used commonly in constructing insulated vests and jackets.

Nylon taffeta is a tightly woven fabric with a smooth finish. The closely packed yarns provide good wind resistance, abrasion resistance and water repellency, although a finish making the garment water-repellent often is added. Nylon taffeta is breathable, down-proof and machine washable. Garments made from this fabric should have seam edges treated or seared with a flame to avoid yarn slippage and raveling. Other properties include snag resistance, high tear strength, heat sensitivity and easy care. The fabric can be machine washed and tumble dried and is extremely lightweight.

Ripstop nylon is similar to nylon taffeta although usually lighter in weight. The unique feature is a heavy nylon thread at %-inch intervals running lengthwise and crosswise in the fabric. This heavy windowpane pattern is easy to see in the fabric. Contrary to the impression its name gives, ripstop fabric will puncture or rip, but only as far as the heavy nylon yarn. Ripstop is similar to nylon taffeta in other properties.

Poplin is a cotton or polyester/cotton blend woven cloth often used in insulated jackets and vests. When tightly woven, the fabric provides good abrasion and wind resistance, although a water-repellent finish must be applied. Often referred to as mountain cloth, many, but not all, of these fabrics are down-proof. They usually are machine washable and dry cleanable, but check care label recommendations.

VersaTech is a 100 percent polyester woven fabric that is breathable and water-repellent The superfine polyester yarn is woven into a very dense and drapable fabric. It prevents water droplets from penetrating the weave, yet water vapor passes between the yarns for breathability and comfort.

ULTREX possesses the same comfort and protection properties as VersaTech. This 100 percent nylon fabric features layers of a microporous coating and a water-repellent finish.

Gore-Tex is a coating for many fabrics used in outdoor wear. This microporous film, when applied to conventional fabrics such as cotton, polyester/cotton poplin or nylon taffeta, creates a waterproof barrier. Tiny pores in the film prevent water droplets from penetrating yet allow moisture vapors from body heat and perspiration to escape. Fabrics treated with Gore-Tex or other microporous films, including **event** and **Dicrylan,** will be more costly than similar untreated fabrics but provide improved protection and comfort for individuals engaged in outdoor activities.

VersaTech, ULTREX, Gore-Tex and **event** are part of an increasing number of outerwear fabrics utilizing membrane technologies to make fabrics waterproof and breathable. Check hangtags for water and vapor transfer properties.

Fashion fabrics such as **corduroy** and **suede cloth** are used in insulated garments on a limited basis. Their appeal is primarily aesthetic. Special water-repellent finishes must be applied.

Some fabric colors and finishes are designed to reflect light and should be selected when safety is a major consideration. Garments to be worn while hunting, or walking or bicycling in high-traffic areas, should reflect light.

Garments with decorative, multicolor designs in the yoke or bodice areas will be more expensive. The designs are purely fashionable and seldom affect the functional qualities of the garment.

Temperature Ratings

A jacket or vest rated to be warm at a given temperature in dry, still air is not likely to keep you warm at that same temperature in a howling wind or dark, foggy conditions. Accounting for variables such as wind, rain, humidity, exertion level and personal metabolism is not possible. Any temperature rating on a jacket would be incorrect most of the time (REI, 2016).

Construction Features

Dressing warmly is a matter of trapping body heat. Garment construction features can enhance the insulating properties of the garment and increase protection from the cold.

Quilting

Quilting stitches are decorative but also make important functional contributions to insulated garments. The design of quilting stitches affects the distribution of down and synthetic fiberfills throughout the life of jackets or vests. Without quilting stitches, down will shift and polyester fiberfill will shift or pull apart.

Avoid garments with quilting stitches placed lengthwise or vertically. During wear, insulation material, especially down, will shift and slip to the bottom edge of the jacket or vest, reducing insulation in the shoulder and upper torso.

Look for garments with crosswise quilting lines that go around the body. This stitching design (baffle box) holds insulation in place and keeps it more evenly distributed over the body. The chevron stitch design results in shorter compartments and holds down and fiberfill in place. One disadvantage is that the V section of the stitching lines tends to be weak and may break during wear.

Quilting lines also affect garment insulation. Thickness means warmth, but quilt stitching lines compress the fabric, forming cold spots. Many stitching lines placed closely together make the garment less bulky, stiff and not as warm. Some manufacturers place felt strips under the quilt stitching lines for reinforcement and insulation. A lining or outside shell not quilted through to the garment creates dead air space and insulation. A lining c.ut somewhat smaller than the outside garment keeps the body from pushing against stress areas, for example the elbow or shoulder, and dislodging down. This is called a differential cut.

When selecting an insulated jacket, check stitching lines. They should be secure, even and of moderate length (1Oto 12 stitches per inch).

Style Features

Waterproof Construction: Because water can impair insulation performance, especially in untreated down, the outer shell of an insulated jacket is water-resistant. Some insulated shells go further, having a waterproof/breathable exterior fabric, along

with taped seams. This type of insulated shell is more expensive, but you may not need to pack a separate rain shell.

Hood: A hoodless jacket reduces the weight and provides ease for packing. Some hoods are detachable or will zip inside the collar. A few hoods are insulated for added warmth. Climbers, skiers and snowboarders need to consider a "helmet compatible" hood big enough to fit over a helmet. Non-climbers sometimes avoid this feature because it makes the hood a little cumbersome.

Adjustment Features

- **Hood adjusters:** They are usually on the sides, with another in back. Some hoods use elasticized trim instead to create a sleek, though less precise, fit.
- **Drawcord:** Typically at the bottom hem, it blocks wind and cold air. A few jackets have the drawcord at the waist instead.
- **Front zipper:** Most have a chin guard on top and a storm flap in front. Some jackets save weight and bulk by having a water-resistant zipper instead of a storm flap. Longer urban jackets might have a two-way front zip to adjust the bottom opening for walking or sitting.
- **Cuffs:** Most have rip-and-stick tabs that make adjusting the wrist fit easy to do, sealing out wind and cold air. Some jackets use an elasticized trim instead, which offers less bother and bulk, but also a less precise fit.

Pocket Features

Having more pockets offers added storage, but it also adds weight and bulk, and increases the price. Zip, snap or rip-and-stick closures offer more secure storage, although an open pocket offers fast access.

- **Zipper protection:** For added rain protection, exposed pockets on some jackets might have flaps; other jackets use water-resistant zips to eliminate bulky flaps.
- **Hip belt compatibility:** Having pockets set slightly higher ensures you access to them while wearing a pack hip belt.
- **Music or gear pockets:** Found more often in urban jackets, these have a port inside for routing headphone cords.
- **Security pockets:** Found more often in travel jackets, these are inside the jacket and/or have a hidden zip opening along a seam or under a flap.
- **Drop-in pockets:** Handy for quickly stashing a hat or gloves, these large, open pockets are inside the jacket, directly behind the side pockets.

Vents: A few insulated jackets include underarm vents and/or core vents for when your exertion level rises. Vents are more common on a jacket with a waterproof/breathable shell.

"Body-mapped" Design: A growing trend is to vary the insulation and shell material based on where it sits on your body. Stretch side panels, less bulky insulation on the sides, waterproof upper surfaces and windproof front panels are just a few examples of this kind of adaptation. The benefit is more refined performance for an intended activity (REI, 2016).

Care

Caring for insulated vests and jackets properly will extend their wear life and preserve their appearance. Always check care recommendations on the hangtag or sewn-in label. The filling or insulation materials usually will influence care recommendations more than the outside or lining fabrics.

Down

Machine wash: Down garments can be machine washed on a delicate cycle or hand washed using cold water. Use mild detergent or down-specific detergent to preserve the feathers and extend the life of the garment. Detergents can be harsh on down and strip away the natural oil on feathers, which can cause them to become brittle, break and lose loft. Experts recommend using a front-loading washing machine. Agitators can shred shells, box baffles and be hard on feathers. Do not use enzyme presoak products or enzyme detergents because the strong chemicals can degrade the material through time (Columbia, 2019).

In hard-water areas, use a nonprecipitating water softener (for example, Calgon) in the rinse cycle to prevent soap film and curd from depositing on the down. Rinse thoroughly. Residue buildup will cause down to clump, losing its loft and insulating properties.

Down garments are extremely heavy when wet. Support them to prevent tears caused by strain. Also, do not wring or twist garments to remove excess moisture. Putting the down garment through the washing machine's spin cycle an extra time can help get out as much water as possible.

Automatic drying: Down garments can be tumble-dried on a low heat setting and a gentle cycle for an extended period of time. Add two or three bath towels to the dryer to absorb moisture and a pair of tennis shoes to break up clumps of wet down.

Down requires several cycles to dry thoroughly. If not dry, mildew may develop. Do not be concerned about overdrying down. Down naturally retains 11 to 13 percent moisture, which it reabsorbs from the air if overdried.

Line drying of down requires special care. Dry garments outdoors on warm, sunny, dry days. Support down garments by draping them over several lines to distribute the weight. Occasionally fluff the garments to separate wet clumps of down pods.

Dry clean down garments professionally. Take down garments to a reputable dry cleaner. Do not clean them at coin-operated establishments.

Thoroughly air dry cleaned items before using them. Residual fumes from solvents may cause illness or death.

Caring for down requires some effort for it to retain its loft. In storage, do not stuff or flatten garments unnecessarily. Fluff garments before using them to increase the down's loft. If down should start to work out of the outside fabric, pull it from the wrong

side and work it back in. Once a hole is formed, additional pods work through to the outside.

Polyester Fiberfill

Polyester fiberfill insulations usually are machine washable and dryable. Use a delicate cycle and warm wash temperature. Thoroughly rinse the garments to remove soap or detergent residue. Adding a nonprecipitating water softener to the rinse water will reduce detergent buildup. Close zippers before washing garments to reduce possible abrasion damage, and turn garment inside out if possible.

Synthetic fiberfill dries quickly in automatic dryers. Use permanent press settings. Check manufacturers' care recommendations for dry cleaning. Some polyester fiberfills (for example, Hollofil) contain a waxlike finish that will be removed by dry cleaning solutions.

Sources

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2019 Consumer Choices Sample Class
Junior & Senior - Insulated Jackets and Vests
Natalie

Situation Statement:
Natalie has $250.00 to purchase a new jacket to wear ice fishing. She is looking for one that is insulated. She also needs it to be waterproof. For safety, Natalie would like the jacket to have reflective material on the outer shell.

Standards:

	1	2	3	4
$250.00 or less	**X** $64.99	$269.99	**X** $211.25	**X** $215.96
Insulated		**X**		**X**
Waterproof	**X**	**X**	**X**	**X**
Reflective outer shell		**X**	**X**	**X**

Class Items:
1. Grundens Women's Weather Watch Jacket
2. Clam Women's Ice Armor Lift Parka
3. Gill Women's OS2 Offshore/Coastal Jacket
4. Up North Sports Striker Ice Women's Climate Jacket

Placing: 4-3-1-2 **Cuts:** 4-2-2

Reasons:
I place this class of insulated jackets and vests **4-3-1-2.**

I place 4 over 3 because 4 is insulated and 3 is not.

I place 3 over 1 because 3 has reflective material on the outer shell, while 1 does not.

I place 1 over 2 because 1 is $250.00 or less, priced at $64.99. 2 exceeds $250.00 with a price of $269.99.
Grant: 2 is insulated.
Grant: 2 has reflective material on the outer shell.

I place 2 last because it is not $250.00 or less.

For these reasons, I place this class of insulated jackets and vests 4-3-1-2.

PD600

Judging Card

Natalie
(Number or Name)

Sample-Junior & Senior
(Class)

Insulated Jackets and Vests
(Class)

Placing Score 4 3 1 2
Cuts 4 2 2
Reason Score - - -

NDSU EXTENSION SERVICE

A 1234	26
B 1243	30
C 1324	30
D 1342	38
E 1423	38
F 1432	42
G 2134	24
H 2143	28
I 2314	26
J 2341	32
K 2413	34
L 2431	36
M 3124	32
N 3142	40
0 3214	30
P 3241	36
Q 3412	46
R 3421	44
S 4123	44
T 4132	48
U 4213	42
V 4231	44
W 4312	50
X 4321	48

Sample Class - Junior & Senior
Insulated Jackets and Vests
Natalie

#1

Grundens Women's Weather Watch Jacket

Waterproof
Adjustable full-sized hood
Adjustable cuffs
Removable hood
4 large zippered pockets
$64.99

Sample Class - Junior & Senior
Insulated Jackets and Vests
Natalie

#2

Clam Women's Ice Armor Lift Parka

Polyester and nylon fabric outer shell
Synthetic insulation
Waterproof
Windproof
Removable softshell liner
Reflective elements on outer shell for visibility
Removable hood
Machine washable
$269.99

Sample Class - Junior & Senior
Insulated Jackets and Vests
Natalie

#3

Gill Women's 052 Offshore/Coastal Jacket

Waterproof
Retractable cuff adjusters
Zippered hand warmer pockets
Water resistant zippers
High cut thermal collar
High visibility reflectors on outer shell
$211.25

Sample Class - Junior & Senior
Insulated Jackets and Vests
Natalie

#4

Up North Sports Striker Ice Women's Climate Jacket

Polyester and nylon fabric outer shell
Synthetic insulation
Waterproof
Removable fleece-lined softshell liner
Machine washable
360 degree reflective material on outer shell
Removable hood
$215.96

2019 Consumer Choices Study Guide
Junior and Senior
Smoothies

Smoothies have become a popular choice for snacks and meals. While once something you could get only from your home blender with a few basic ingredients, now smoothies can be purchased in ready-to-drink form. These ready-to-drink smoothies can be found in places such as grocery and convenience stores, fast-food restaurants and coffee shops. You also can purchase frozen ingredients in pouches to which you must add milk, water or juice to make a smoothie instantly. Entire stores are devoted to selling smoothies, allowing customers to choose everything from fruits and caffeine to added protein powders, vitamins and minerals.

The good news is that smoothies can be very nutritious and provide a convenient way to get a few of the daily MyPlate food group needs met, as well as getting vitamins and minerals (USDA, 2016). However, some restaurants and food manufacturers add lots of extra sugar, fat and other unnecessary ingredients, with few vitamins, minerals, protein or fiber.

With the many options, knowing which smoothie is the best choice for you and your situation can be difficult. The following information will help you choose a healthful and affordable smoothie to meet your specific needs.

Cost

Smoothies can be economical or very costly. The packaging, brand name, ingredients and whether you are buying them at a store ready-to-drink, to make at home, or at a restaurant, coffee shop or fast-food location all contribute to the cost.

When you are on the go and buying a ready-to-drink smoothie from a store or restaurant, you probably plan to drink the entire smoothie at one time. In this situation, you should compare the cost per unit (large smoothie at a fast-food restaurant or one bottle purchased at a store). Some smoothies may cost more than others, but spending a little more money to make a more healthful choice is generally a better investment in your health.

When buying smoothies to have at home, you might buy a larger, family-size bottle containing many servings. In this case, you can compare the price per serving. To determine the price per serving, check the Nutrition Facts label to see how many servings are in the container (servings per container). Divide the price by the number of servings to determine the price per serving.

For example, a large, family-size smoothie priced at $4 containing eight servings would cost 50 cents per serving ($4 divided by 8 servings= 50 cents per serving). However, if

you mix ingredients yourself, then you have an extra step of adding together the price per serving of each ingredient to get the total cost per serving.

Nutritional Value

Smoothies can be a snack or a meal. Which one you choose will influence the nutritional value you should expect from your smoothie. Meals are where we get most of our energy (calories) and nutrition (MyPlate food groups, carbohydrate, protein, fat, vitamins, minerals). Snacks should provide fewer calories, carbohydrate, protein and fat, and may contain only one MyPlate food group (USDA, 2016).

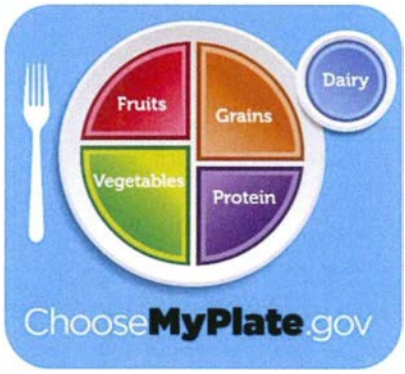
MyPlate Food Groups
Smoothies primarily are made from fruit and/or dairy (usually yogurt or milk). However, some smoothies contain vegetables or protein.

- Smoothies that are a meal should provide foods from at least two food groups (for example, dairy, fruit, vegetable).

- Smoothies that are a snack can provide only one food group (for example, dairy or fruit).

Dairy foods provide calcium, protein, vitamin A, vitamin D, potassium and much more. Vegetables and fruits are good sources of vitamin A, vitamin C and minerals such as potassium. Look for smoothies that have more of these healthful nutrients.

Calories, Carbohydrate, Protein and Fat
Smoothies used for a meal usually are higher in calories, carbohydrate, protein and fat than smoothies used as a snack. Read the Nutrition Facts label on products so you know how many total calories are in each serving and the source of the calories. Carbohydrate and protein provide 4 calories per gram, while fat provides 9 calories per gram.



(USDA, 2016)

Calories: Consider the number of calories per serving. A serving could be a medium-size smoothie from a fast-food restaurant or one 8-ounce serving out of a larger container.

- Smoothies that are a meal may provide 300 calories or more. However, be careful to maximize vitamins and minerals for the amount of calories, fat and sugar contained in the smoothie.

- When having a smoothie as a snack, it should provide less than 300 calories.

Carbohydrate: Carbohydrate is the body's favorite source of energy and the only source of energy that the brain can use. Limit the amount of sugar in the smoothies that you choose. Read the Nutrition Facts label to see the total amount of carbohydrate, sugar and fiber per serving.

- **Fiber:** Carbohydrate from fiber is beneficial to your health by helping you feel full longer and helping with digestion. Eating enough fiber also can reduce your risk for heart disease. Smoothies that use whole fruits have more fiber than smoothies that use fruit juices. Look for smoothies with more fiber.

- **Sugars:** Sugars are present in naturally sweet foods such as fruits, but sugar also may be added to further sweeten foods. Many smoothies contain fruits such as bananas, berries, oranges and pineapple. However, some contain only fruit juices. These fruits provide a quick energy boost from the natural sugar and often bring some vitamins and fiber along with them. Added sugars supply calories with few or no nutrients and no dietary fiber. Sugars are listed on the Nutrition Facts label under carbohydrate. Added sugars may be listed in the ingredient list as dextrose, cane sugar and high-fructose corn syrup. When comparing smoothies, look for smoothies with less sugar, particularly when the smoothie will be a snack.

Protein: Protein does many things in your body, but it is best known for helping you build muscle. Protein also may help you feel full longer. When a smoothie is going to be a meal, you will want it to have some protein. If a smoothie will be a snack, it may not have as much protein. In general, choose smoothies with more protein.

Fat: Our bodies need some fat to provide energy and carry nutrients, but not too much. Some types of fat are better for our health than others. Saturated and trans fat are bad for your heart health. The 2015 Dietary Guidelines for Americans from the U.S. Department of Agriculture (USDA) and the Department of Health and Human Services (HHS) recommends that you limit saturated fat to less than 10 percent of calories and avoid trans fat (Dietary Guidelines Advisory Committee, 2015). Look for smoothies lower in saturated fat and ones that contain O grams of trans fat. Read the ingredient list. Partially hydrogenated oils are sources of trans fat.

Vitamins and Minerals

Nutrition Facts labels provide information about vitamins and minerals listed as a percent daily value (%DV). The goal is to get 100 percent of the DV from foods each day. Vitamin A is good for eyes and skin. Vitamin C helps protect the immune system from disease. Iron helps circulation and energy levels. Calcium helps build strong bones. In general, you want to choose smoothies with more vitamins and minerals.

When a smoothie has 10 percent or more of the recommended calcium, it may contain some foods from the dairy group, such as milk or yogurt. An individual who is lactose-intolerant cannot consume lactose, a sugar found in the dairy group. A person who is lactose-intolerant will need to verify that the ingredients on the Nutrition Facts label are lactose- or dairy-free, meaning that the smoothie has no added dairy products, such as milk, yogurt or frozen yogurt. Dairy-containing smoothies will have an allergen statement ("contains milk") listed by the ingredient statement. Alternatives such as almond milk or soy milk are good lactose/dairy-free substitutions for a smoothie.

Salt

Our bodies need sodium (salt) to function, but getting too much may lead to high blood pressure. The 2015 Dietary Guidelines for Americans and MyPlate recommend that you consume no more than 2,300 milligrams (mg) of sodium per day (Dietary Guidelines Advisory Committee, 2015; USDA, 2016). Be sure to check the Nutrition Facts label and look for smoothies that are lower in sodium.

Ingredients

Smoothies typically are made from fruit, fruit juices and dairy (milk or yogurt), and some may contain vegetables. Many of the "designer" type smoothies contain more additives than necessary to meet your daily nutritional needs.

Fruit juices: Choose smoothies made with whole fruit. For smoothies containing juice, choose those with 100 percent fruit juice.

Sugar, sugar substitutesInonnutritive sweeteners: Several sugar substitutes and nonnutritive sweeteners are used to make foods sweet with fewer calories. The nonnutritive sweeteners on the market today used in soft drinks with the brand name listed in parentheses include aspartame (Equal or Nutrasweet), sucralose (Splenda), acesulfame potassium (Sunette) and saccharin (Sweet'N Low). All of these nonnutritive sweeteners have been approved by the Food and Drug Administration (FDA). Stevia comes from a plant, tastes very sweet and is used as a sugar substitute in some foods. A highly processed form is allowable in foods in the U.S. However, because the long-term health effects of nonnutritive sweeteners and sugar substitutes are unknown, particularly for children and adolescents, choose smoothies made with naturally sweet ingredients (Cleveland Clinic, 2013).

Caffeine: Caffeine, a stimulant, is added to some smoothies and must be listed as an ingredient if it is added. Caffeine is not necessary for health, and little is known about the safety of caffeine for children and adolescents. Avoid caffeine in smoothies.

Additional B vitamins: Many smoothie companies add vitamin B that they advertise as "giving you more energy." Vitamins do not provide energy, but they help your body use the energy you get from carbohydrate, protein and fat.

We can get plenty of vitamin B from the foods we eat. We do not need additional vitamin supplements and powders unless recommended by a doctor.

Amino acids (taurine, arginine and creatine): Many smoothie companies add amino acids that they advertise as "giving you more energy," "help with recovery" or "build muscle." Protein from food is made of amino acids, and we can get plenty of protein from the foods we eat. We do not need additional amino acid supplements and powders unless recommended by a doctor.

Reading a Nutrition Facts Label

Sample label for
Macaroni & Cheese

Sources

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2019 Consumer Choices Sample Class
Junior & Senior- Smoothies
Howard

Situation Statement:
Today was field day at Howard's school. While at the grocery store with his mom after school, Howard decides he wants a smoothie as a snack after all of the physical activity from playing games at field day. However, he wants to select a smoothie with 100 calories or less per serving. Howard also knows he is having dessert tonight, so he wants to be careful to limit his sugar intake to 10 grams or less per serving. Howard is also price conscious, so he is looking for a smoothie that is priced less than $1.50 per serving. Lastly, he would like a smoothie containing 40 milligrams of sodium or less per serving.

Standards:

	1	2	3	4
100 calories or less per serving	X 80	X 60	130	110
10 grams of sugar or less per serving	15	X 10	26	17
Less than $1.50 per serving	X $0.36	X $0.40	$1.94	X $1.40
40 milligrams of sodium or less per serving	X 40	X 40	X 20	50

Class Items:
1. VB Splash Smoothies
2. Danimals Strawberry Explosion Smoothie
3. Bolthouse Farms Green Goodness Smoothie
4. Bolthouse Farms Blueberry Banana Almondmilk Smoothie

Placing: 2-1-4-3 **Cuts:** 4-7-3

Reasons:
I place this class of smoothies 2-1-4-3.

I place 2 over 1 because 2 contains 1Og of sugar or less per serving having 10g, while 1 has 15g.

I place 1 over 4 because 1 contains 100 calories or less per serving with 80 calories, while 4 contains 110 calories.
1 contains 40mg of sodium or less per serving having 40mg, while 4 contains 50mg.

I place 4 over 3 because 4 is priced less than $1.50 per serving at $1.40, while 3 exceeds $1.50, priced at $1.94 per serving.
Grant: 3 contains 40mg of sodium or less per serving.

I place 3 last because it does not contain 100 calories or less per serving.
It does not contain 1Og of sugar or less per serving.
It is does not cost less than $1.50 per serving.

For these reasons, I place this class of smoothies 2-1-4-3.

PD600

Judging Card

Howard
(Number or Name)

Sample-Junior & Senior
(Class)

Smoothies
(Class)

Placing Score 2 1 4 3
Cuts 4 7 3
Reason Score - -

NDSU EXTENSION SERVICE

A 1234	43
B 1243	46
C 1324	29
D 1342	18
E 1423	35
F 1432	21
G 2134	47
H 2143	50
I 2314	37
J 2341	30
K 2413	43
L 2431	33
M 3124	19
N 3142	8
O 3214	23
P 3241	16
Q 3412	1
R 3421	5
S 4123	28
T 4132	14
U 4213	32
V 4231	22
W 4312	4
X 4321	8

Sample Class - Junior & Senior
Smoothies
Howard

#1

VS Splash Smoothies

$0.36/serving

Nutrition Facts*

Serving Size 8 fl. oz.

Amount/Serving	
Calories	80
Fat Calories	0
	% DV**
Total Fat 0g	0%
Sat. Fat 0g	0%
Trans. Fat 0g	0%
Cholesterol 0mg	0%
Sodium 40mg	2%
Potassium 55mg	2%
Carbohydrate Total 18g	6%
Fiber 0g	0%
Sugars 15g	
Protein 3g	
Vitamin A	20%
Vitamin C	20%
Calcium	10%
Iron	2%

Ingredients

Water, High Fructose Corn Syrup, Reconstituted Fruit Juice Blend (Water And Concentrated Juices Of Apples, Strawberries Clarified Bananas), Contains Less Than 2% Of: Soy Protein Isolate,Pectin, Natural Flavoring, Citric Acid, Calcium Phosphate, Phosphoric Acid, Vitamin C (Ascorbic Acid), Soy Lecithin, Sucralose, Beta Carotene, Red 40.

* The nutrition information contained in this list of Nutrition Facts is based on our current data. However, because the data may change from time to time, this information may not always be identical to the nutritional label information of products on shelf.

** % Daily Values (DV) are based on a 2,000 calorie diet.

Sample Class - Junior & Senior
Smoothies
Howard

#2

Danimals Strawberry Explosion Smoothie

CONTAINS NO FRUIT JUICE* *DANIMALS DRINK STRAWBERRY HAVE NO JUICE ADDED FOR FLAVOR, BUT DO CONTAIN VEGETABLE JUICE ADDED FOR COLOR.

Nutrition Facts
Serving Size 1 Bottle
Servings per Package 6

Amount Per Serving	
Calories 60	Calories from Fat 5
	% Daily Value*
Total Fat 0.5g	1%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol <5mg	1%
Sodium 40mg	2%
Potassium 105mg	3%
Total Carbohydrate 10g	3%
Sugars 10g	
Protein 2g	4%
Calcium 10% • Vitamin D 10%	
Riboflavin 8% • Phosphorus 8%	

Not a significant source of dietary fiber, vitamin A, vitamin C and iron.

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

		Calories:	2,000	2,500
Total Fat	Less than		65g	80g
Sat Fat	Less than		20g	25g
Cholesterol	Less than		300mg	300mg
Sodium	Less than		2,400mg	2,400mg
Potassium			3,500mg	3,500mg
Total Carbohydrate			300g	375g
Dietary Fiber			25g	30g
Protein			50g	65g

INGREDIENTS: CULTURED GRADE A LOW FAT MILK, WATER, SUGAR, CONTAINS LESS THAN 1% OF MODIFIED CORN STARCH, WHEY MINERAL COMPLEX, NATURAL FLAVORS, PECTIN, VEGETABLE JUICE (FOR COLOR), MALIC ACID, POTASSIUM SORBATE (TO MAINTAIN FRESHNESS), VITAMIN D_3, SODIUM CITRATE, AGAR AGAR.

CONTAINS ACTIVE YOGURT CULTURES.

$0.40/serving

Sample Class - Junior & Senior
Smoothies
Howard

#3

Bolthouse Farms Green Goodness Smoothie

$1.94/serving

N ut 1 10 Fa .c ts
SeNing Size 8 fl. oz. (2 L)

Amount Per Serving	
Calories 130	Calories from Fat 0
	% Daily Value*
TotalFa1 Og	0%
Saturated Fat OfJ	oQ
Trans Fa Og	
Cholesterol Orng	0%
S0dum 20mg	1,a
Potassium 320mg	9%
Total Clrbohydra1e 30g	10%
Die ary ber g _	4%
Sugars 2·6g	
Protern 2g	

Vitamin A 20%	•	Vitamin C 35%
Calcium 2%	•	Iron 6%
Riboflavin 10%	•	Vitamin B6 15%
Vitamin B12 25%	•	Manganese 100%

*Percent Daily Values are based on a 2,000

INGREDIENTS

PINEAPPLE JUICE FROM CONCENTRATE (WATER, PINEAPPLE JUICE CONCENTRATE), APPLE JUICE FROM CONCENTRATE (WATER, APPLE JUICE CONCENTRATE), MANGO PUREE FROM CONCENTRATE (WATER, MANGO PUREE CONCENTRATE), BANANA PUREE, CUCUMBER JUICE FROM CONCENTRATE (WATER, CUCUMBER JUICE CONCENTRATE), KIWI PUREE, NATURAL FLAVOR, SPIRULINA, GREEN TEA, SPINACH, BROCCOLI, BARLEY GRASS, WHEATGRASS, GARLIC, JERUSALEM ARTICHOKE, NOVA SCOTIA DULSE. CONTAINS: WHEATGRASS, BARLEY GRASS

Sample Class - Junior & Senior
Smoothies
Howard

#4

Bolthouse Farms Blueberry Banana Almondmilk Smoothie

$1.40/serving

Nu rt on Fac _s
Serving SW!8 fl. OL (240ml)

Amount Per Serving	
C8kries 110	fm Faf 20
	% Daily Value*
Total Fa 2g	3%
Saturated Fat 0g	
Trans Fat 0g	
Cholesterol Omg	0%
Sod·um SOmg	2%
Pctassim 140mg	4%
Tolal Carbohydrate 22g	
Dietary Fiber 3g	
Sugars 17g	
Protein 1g	

Vitamin A 0%	Vitamin C 0%
Calcium 2%	Iron 2%

*Percent Daily Values are based on a 2,000 calorie diet.

INGREDIENTS

ALMONDMILK (WATER, ALMONDS), BANANA PUREE, BLUEBERRY PUREE, AGAVE, OAT BRAN, (CHICORY) ROOT FIBER, COCONUT WATER CONCENTRATE, LEMON JUICE CONCENTRATE, NATURAL FLAVOR. CONTAINS: ALMONDS, COCONUT, AND OAT

2019 Consumer Choices Study Guide
Junior and Senior
Outdoor Backpacks

Throughout history, the human race has looked for ways to lighten the load carried. In years past, that may have been a knapsack slung over the shoulder, but through time, that knapsack has turned into what we think of now as a backpack. We use backpacks for a variety of reasons. When buying a backpack for an outdoor excursion, a few things to consider are how long you plan to be gone, the gear you plan to pack and the outdoor conditions where you will be going.

Fit

The right fit is one that offers:

- A size appropriate for your torso length (not your overall height)
- A comfortable, snug grip on your hips

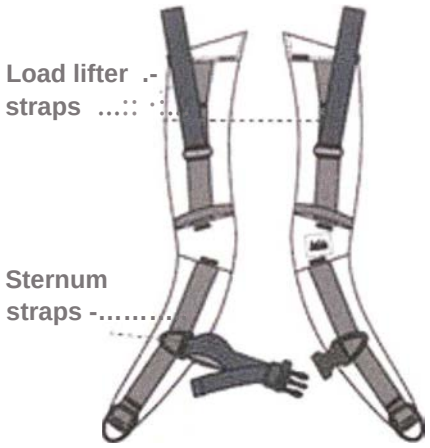
Torso length: Some packs are available in multiple sizes, from extra small to large, fitting a range of torso lengths. These ranges vary by manufacturer and gender. Check the product specifications for size details of a specific pack.

Waist size: The majority of a backpack's weight, 80 percent or more, should be supported by your hips. Backpack hip belts usually accommodate a wide range of hip sizes, from the mid-20 inches to the mid-40 inches. Some packs even offer interchangeable hip belts. However, people with narrow waists sometimes find they cannot make a standard hip belt tight enough and need a smaller size.

Gender: Packs can be female-specific because they are engineered to conform to the female frame. Torso dimensions are generally shorter and narrower than in packs made for a male frame.

Youth: Backpacks made for children typically offer smaller capacities and include an adjustable suspension to accommodate a child's growth.

Load lifter straps: These straps are stitched into the top of the shoulder straps and connect to the top of the pack frame. Ideally, they will form a 45-degree angle between your shoulder straps and the pack. When kept snug and not too tight, they prevent the upper portion of a pack from pulling away from your body.



Sternum straps: This midchest strap allows you to connect your shoulder straps, which can boost your stability. This can be useful when traveling on uneven terrain.

Frame Type

Internal frame: This frame is designed to keep a hiker stable on uneven, off-trail terrain. This frame incorporates load-support technologies that transfer the load to the hips. The majority of packs sold are this type.

External frame: This frame is a good choice for a heavy, irregular load. It offers good ventilation and lots of gear organization options. It works well when carrying an inflatable kayak or surveying tools.

Frameless: For those who like to hike fast and light, a frameless pack where the frame is removable is the perfect choice to lighten the load.

Injury Prevention

To prevent injury when using a backpack, do the following:

- ***Always use both shoulder straps.*** Slinging a backpack over one shoulder can strain muscles. Wearing a backpack on one shoulder may increase curvature of the spine.

- ***Tighten the straps so that the pack is close to the body.*** The straps should hold the pack 2 inches above the waist.

- ***Pack light.*** The backpack never should weigh more than 10 to 20 percent of your total body weight.

- ***Organize the backpack to use all of its compartments.*** Pack heavier items closest to the center of the back.

- ***Use both knees when bending down.*** Do not bend over at the waist when wearing or lifting a heavy backpack.

- ***Learn back-strengthening exercises.*** Build up the muscles used to carry a backpack.

Size

The following is a general guide for which pack sizes (measured in liters) typically work well for backpackers during warm-weather hikes of varying lengths. Colder-weather trips usually require a larger pack, while ultralight backpackers may choose a pack smaller than the recommendations.

Length of Trip	Pack capacity (liters)
Weekend (1-3nights)	35-50
Multiday (3-5 nights)	50-80
Extended (5+ nights)	70+

Weekend (1-3 nights; 35-50 liters)

Efficient packers using newer, less bulky gear can keep things light on one- to three-night trips by using a pack in this range. Be aware that packing light requires self-discipline and careful planning. However, if you can pull it off, the light-on-your-feet rewards are fantastic.

Multiday (3-5 nights; 50-80 liters)

These are the most popular outdoor packs sold, and they are an excellent choice for warm-weather trips lasting three or more days. This size pack also is used for backcountry skiing, day trips, overnighters and sometimes two-night trips.

Extended (5+ nights; 70 liters or larger)

Extended trips of five days or more usually call for packs of 70 liters or larger. These also usually are the preferred choice for:

- Winter treks lasting more than one night - Larger packs can more comfortably accommodate extra clothing, a warmer sleeping bag and a four-season tent (which typically includes extra poles).

- Adults taking young children backpacking - Mom and Dad end up carrying a lot of kids' gear to make the experience enjoyable for their young ones.

Fabric

Durable, coated fabrics repel sharp objects and rainwater, and resist tears. Most backpacks are made of nylon, and the heavier the weight of that nylon, the more durable the fabric. Cordura nylon, ripstop nylon and packcloth nylon are very durable, strong and abrasion-resistant. They also have water-repellant or waterproof coatings and/or treatments.

Seams and Stitching

You also will want to check the seams of a pack to make sure they are firmly stitched together in a zig-zag pattern or in multiple rows. High-abrasionareas, such as the backpack bottom and seams, should be reinforced. Check to make sure the stitching is straight, no threads are loose and the fabric quality is able to withstand the weight it will have to carry.

Features

Main Compartment Access

- Top-loading openings are standard. Items not needed until the end of the day go deep inside.

- Panel-loading packs offer a zippered front panel that folds open, exposing the full interior of the pack. Some have a side zipper, which makes reaching items deep in the pack much easier.

Sleeping Bag Compartment

- Some packs have a zippered stash spot near the bottom. It is a useful feature if you do not want to use a stuff sack for your sleeping bag. Alternately, this space can hold other gear that you would like to reach easily.

Zippered-top Lid

- Many packs offer a zippered-top lid for the part of the pack where most backpackers store quick-access items such as sunscreen, insect repellent, a camera, snacks and maps. Some lids detach from the main pack and convert into a hip-belt pack for day trips.

Pockets

- ***Elasticized side pockets:*** These pockets lie flat when empty but stretch to hold a water bottle, tent poles or other loose objects.

- ***Hip-belt pockets:*** These pockets accommodate small items you want to reach quickly, such as a smartphone, snacks or packets of energy gel.

- ***Shovel pockets:*** These pockets are flaps stitched onto the front of a pack bag with a buckle closure at the top. Originally intended to hold a snow shovel, they now appear on many three-season packs, serving as stash spots for a map, jacket or other loose, lightweight items.

- ***Front pockets:*** Sometimes added to the exterior of a shovel pocket, these can hold smaller, less bulky items.

Ventilation

When a pack has an internal-frame design, airflow is cut, which leads to the "sweaty-back syndrome." To remedy this, designers have addressed this issue in a variety of ways. For example, some packs have "ventilation chimneys" built into back panels.

A few packs have engineered a suspended mesh back panel, sometimes called tension-mesh suspension. This is a trampoline like design in which the frame-supported pack bag rides a few inches away from your back, allowing your back to rest against the highly breathable mesh.

Padding

If you are using a lightweight pack with a minimalistic hip belt and lumbar pad, you can encounter sore spots on your hips and lower back. If this is the case, consider using a cushier hip belt.

Attachment Points

If you frequently travel with an ice axe or trekking poles, look for tool loops that allow you to attach them to the exterior of the pack. Rare is the pack that does not offer at least a pair of tool loops.

Backpack Accessories

Rain cover: Pack fabric interiors usually are treated with a waterproof coating. However, packs have seams and zippers where water can seep through, and the fabric's exterior absorbs some water weight during a downpour. The solution is a rain cover, which could be a plastic garbage bag (cheap but clumsy) or a more customized pack cover. If you expect rain on your trip, this is a good item to carry. An alternative is to bundle gear internally in waterproof dry stuff sacks. Lightweight dry sacks can be a better option in windy conditions because strong wind gusts have the potential to peel a cover off of a pack abruptly.

Hydration reservoir: Almost all packs offer an internal sleeve into which you can slip a hydration reservoir (almost always sold separately), plus one or two hose portals through which you can slip the siptube.

Sources

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Reviewed and revised February 2019 by Samantha Roth, NDSU Family & Consumer Science Extension Agent; and Meagan Scott, NDSU 4-H Youth Development Specialist

2019 Consumer Choices Sample Class
Junior & Senior- Outdoor Backpacks
Dixie

Situation Statement:
Dixie and her family are going on a two-night weekend trip to the Theodore Roosevelt National Park this summer. She would like to purchase a new outdoor backpack for the trip. Dixie wants her new pack to be made of cordura nylon. She would also like her backpack to have a pocket for her water bottle. Dixie's favorite color is green.

Standards:

	1	2	3	4
Weekend pack (35-50 liters)	X 50	X 35	18	28
Cordura nylon				X
Water bottle pocket	X	X	X	X
Green	X		X	X

Class Items:
1. OutdoorMaster Hiking Backpack
2. Venture Pal Lightweight Packable Durable Travel Hiking Backpack
3. Teton Sports Oasis1100 Hydration Backpack
4. The North Face Unisex Borealis Backpack

Placing: 1-2-4-3 **Cuts:** 3-2-5

Reasons:
I place this class of outdoor backpacks 1-2-4-3.

I place 1 over 2 because 1 is available in green, while 2 is not.

I place 2 over 4 because 2 is suitable as a weekend backpack, as it has a 35 L capacity, while 4 only has a 28 L capacity.
Grant: 4 is made of cordura nylon.
Grant: 4 is available in green.

I place 4 over 3 because 4 is made of cordura nylon, while 3 is made of 6000 diamond ripstop.

I place 3 last because it is not suitable as a weekend backpack.
It is not made of cordura nylon.

PD600

Judging Card

Dixie
(Number or Name)

Sample-Junior & Senior
(Class)

Outdoor Backpacks
(Class)

Placing Score 1243
Cuts - - - -
Reason Score 325

NDSU EXTENSION SERVICE

A 1234	45
B 1243	50
G 1324	38
D 1342	36
E 1423	48
F 1432	41
G 2134	42
H 2143	47
I 2314	32
J 2341	27
K 2413	42
L 2431	32
M 3124	28
N 3142	26
O 3214	25
P 3241	20
Q 3412	21
R 3421	18
S 4123	43
T 4132	36
U 4213	40
V 4231	30
W 4312	26
X 4321	23

For these reasons, I place this class of outdoor backpacks, 1-2-4-3.

Sample Class - Junior & Senior
Outdoor Backpacks
Dixie

#1

OutdoorMaster Hiking Backpack

Numerous small and large pockets
2 side water bottle pockets
External attachment points to hold a hydration reservoir, tent, sleeping bag
Material: High quality and lightweight durable nylon
Capacity: 50 L
Colors: Black/Grey, Blue/Grey, Green/Grey, Light Green/Grey,
Orange/Grey, Purple/Grey and Red/Grey

Sample Class - Junior & Senior
Outdoor Backpacks
Dixie

#2

Venture Pal Lightweight Packable Durable Travel Hiking Backpack

1 main zipped compartment
2 zipped front pockets
2 side water bottle pockets
Material: High quality; tear and water resistant nylon
Capacity: 35 L
Colors: Black, Blue, Fuchsia, Orange, Purple, Red, Grey

Sample Class - Junior & Senior
Outdoor Backpacks
Dixie

#3

Teton Sports Oasis1100 Hydration Backpack

3 zipped pockets
2 side water bottle pockets
70 oz. hydration reservoir with triple-heat sealed edges
Water resistant rainfly
Material: 600D diamond ripstop
Capacity: 18 L
Colors: Black, Green, Orange, Blue, Bright Green

Sample Class - Junior & Senior
Outdoor Backpacks
Dixie

#4

The North Face Unisex Borealis Backpack

2 side water bottle pockets
Front elastic bungee for external storage
Fleece lined media pocket
Reflective bike light loop
Removable waist belt
Material: 21OD cordura nylon mini-ripstop
Capacity: 28 L
Colors: Blue, Green, Orange, Yellow, Grey, Navy, White