

**FFA Forestry Contest  
2018 Forest Business Management Problem**

Mel Ting, a logging business owner, is trying to decide whether he can make a profit on a timber sale that was recently advertised by a private landowner. Use the background information provided below to answer the 10 multiple-choice questions, each worth 5 points. Record your answer on the scantron bubble sheet.

<b>Equipment</b>		
Type of equipment	Number of pieces of equipment	Owning and operating cost per scheduled hour per machine
Feller-processor	1	\$65.00
Forwarder	1	\$50.00
<b>Total for all machines</b>		<b>\$115.00</b>
<b>Operating Data</b>		
Number of employees (including owner)	2	
Employee wages (including owner)	\$15.50 per hour	
Fringe benefit rate (% of wages)	17%	
Contract hauling to market	\$15.00 per cord	
<b>Harvest Site Data</b>		
Cost to move equipment to site	\$500/piece of equipment	
Stumpage cost	\$32.00 per cord	
Sale area	40 acres	
Yield per acre	22 cords	
Harvesting rate	55 cords per day	
Scheduled hours worked per day		
Feller-processor	8 hours	
Forwarder	9 hours	
<b>Owner's Profit Requirement</b>		
Minimum profit required (percent of revenue received at the mill)	2.50%	
<b>Marketing Information</b>		
Delivered price received at mill	\$92.00 per cord	

## FFA Forestry Contest

Contestant name: \_\_\_\_\_

Contestant No.: \_\_\_\_\_

School: \_\_\_\_\_

### 2018 Forest Business Management Problem (50 points)

**Note: All values are rounded to the nearest whole integer**

This portion of the contest consists of 10 multiple choice questions, each worth 5 points. Mark your answers on the scantron bubble sheet. DO NOT mark on this exam.

1. What is the total number of cords to be harvested at this sale?  
a) 710      b) 795      c) 880      d) 920
2. How many work days are required to harvest the sale?  
a) 12      b) 16      c) 20      d) 23
3. What is the total revenue that would be received from the mill for this sale?  
a) \$68,400    b) \$73,850    c) \$80,960    d) \$84,700
4. What is the total payroll (salary + fringe benefits) for this sale?  
a) \$4,933    b) \$5,512    c) \$6,312    d) \$8,215
5. What is the total move cost for this sale?  
a) \$950      b) \$1,000    c) \$1,800    d) \$2,150
6. What is the total cost to own and operate the machines at this sale (excluding labor)?  
a) \$14,760    b) \$21,600    c) \$27,650    d) \$31,280
7. What is the total cost to haul harvested wood to the mill from this sale?  
a) \$12,260    b) \$13,200    c) \$15,600    d) \$16,255
8. What is the total cost of stumpage for this sale?  
a) \$18,900    b) \$23,280    c) \$28,160    d) \$32,175
9. What is the logging business owner's minimum profit required to bid on this sale?  
a) \$1,616    b) \$1,952    c) \$2,024    d) \$2,374
10. What is the net profit (Total Revenue – Total Expenses) for this sale?  
a) \$257      b) \$363      c) \$812      d) \$1,218

# **2017-18 Fall FFA Forestry Contest: Forestry Tools & Equipment**

## **List of codes to enter on Scantron bubble sheet**

Identify 5 forestry tools or pieces of equipment from the following list at five points each. Enter your answers on the provided Scantron bubble sheet.

- |                                   |                          |                                 |
|-----------------------------------|--------------------------|---------------------------------|
| 501. Aerial photo                 | 520. Fire swatter (flap) | 540. Pruning saw                |
| 502. Angle gauge (Cruz-all style) | 521. Forwarder           | 541. Plastic flagging           |
| 503. Backpack fire pump           | 522. Fire weather kit    | 542. Pruning shears             |
| 504. Bow saw                      | 523. GIS map             | 543. Pulaski-Forester Axe       |
| 505. Bulldozer                    | 524. GPS receiver        | 544. Relaskop                   |
| 506. Canthook                     | 525. Hand compass        | 545. Safety glasses             |
| 507. Chainsaw                     | 526. Hand lens           | 546. Safety hardhat             |
| 508. Chainsaw chaps               | 527. Harvester/processor | 547. Shearing knife             |
| 509. Chipper/Grinder              | 528. Hip chain           | 548. Skidder                    |
| 510. Clinometer                   | 529. Hookeroon           | 549. Slasher                    |
| 511. Containerized seedling block | 530. Increment borer     | 550. Soils map                  |
| 512. Cruising vest                | 531. Laser rangefinder   | 551. Steel tape                 |
| 513. Data recorder                | 532. Log truck           | 552. Stereoscope                |
| 514. Diameter tape                | 533. Logger's tape       | 553. Tally book                 |
| 515. Dot grid                     | 534. Lopping shears      | 554. Topographic map            |
| 516. Drip torch                   | 535. Mattock             | 555. Tree caliper               |
| 517. Ear protectors               | 536. Peavy               | 556. Tree injector/hypo hatchet |
| 518. Feller-buncher               | 537. Planimeter          | 557. Tree marking gun           |
| 519. Fire rake                    | 538. Plant press         | 558. Tree stick                 |
|                                   | 539. Planting hoe or bar | 559. Wedge prism                |

## 2017-18 Fall FFA Forestry Contest: Tree ID (90 points)

### List of species codes to enter on Scantron bubble sheet

This portion of the contest consists of 15 plant identification specimens, each worth 6 points. Mark your answers on the Scantron bubble sheet using the three-digit codes noted below.

#### Hardwoods

- 201. American elm
- 202. Balsam poplar
- 203. Basswood
- 204. Bigtooth aspen
- 205. Black ash
- 206. Black cherry
- 207. Black walnut
- 208. Boxelder
- 209. Bur oak
- 210. Butternut
- 211. Cottonwood
- 212. Green ash
- 213. Hackberry
- 214. Hickory
- 215. Honey locust
- 216. Ironwood (*Ostrya* sp)
- 217. Northern pin oak
- 218. Northern red oak
- 219. Paper birch
- 220. Quaking aspen
- 221. Red maple
- 222. Russian olive
- 223. Silver maple
- 224. Slippery elm
- 225. Sugar maple
- 226. White ash
- 227. White oak
- 228. Willow

#### Softwoods

- 229. Balsam fir
- 230. Black spruce
- 231. Colorado (blue) spruce
- 232. Eastern hemlock
- 233. Eastern red cedar
- 234. Eastern white pine
- 235. Jack pine
- 236. Northern white cedar
- 237. Norway spruce
- 238. Red (Norway) pine
- 239. Scotch pine
- 240. Tamarack (Eastern larch)
- 241. White spruce

## FFA Forestry CDE Timber Cruising

On your score sheet, record individual tree DBH to the nearest inch and merchantable height to the nearest  $\frac{1}{2}$  sawlog converted to feet (e.g.,  $1 \frac{1}{2}$  sawlogs equals 24 feet). Then utilizing that diameter and height information, determine individual tree volume from the table below and record that information on your score sheet.

### Tree Volume (Scribner Rule by Number of 16 foot logs)

Diameter breast high (inches)	Volume (board feet) when number of 16-foot logs is:					
	$\frac{1}{2}$	1	$1 \frac{1}{2}$	2	$2 \frac{1}{2}$	3
10	17	28	36	44	48	52
11	22	38	49	60	67	74
12	28	47	61	75	85	95
13	34	58	76	94	107	120
14	40	69	92	114	130	146
15	47	82	109	136	157	178
16	54	95	127	159	185	211
17	63	109	146	184	215	246
18	72	123	166	209	244	280
19	81	140	190	240	281	322
20	90	157	214	270	317	364
21	100	176	240	304	358	411
22	111	194	266	338	398	458
23	123	214	294	374	441	508
24	137	234	322	409	484	558
25	149	258	355	452	534	617
26	165	281	388	494	585	676
27	179	304	420	536	636	736
28	195	327	452	578	686	795
29	210	354	491	628	746	864
30	277	382	530	678	806	933

**State FFA Forestry 2018 Contest  
Wood Identification (50 points)**

**Sample 1**

- a. Red (Norway) pine
- b. Cherry
- c. Northern red oak
- d. White oak

- a. Red (Norway) pine
- b. Cherry
- c. Birch
- d. White pine

**Sample 2**

- a. Ash
- b. Hackberry
- c. Ponderosa pine
- d. Butternut

**Sample 8**

- a. Douglas fir
- b. Northern red oak
- c. White pine
- d. Ash

**Sample 3**

- a. Hickory
- b. Black walnut
- c. Eastern red cedar
- d. Aspen

**Sample 9**

- a. Butternut
- b. Basswood
- c. Douglas fir
- d. Eastern red cedar

**Sample 4**

- a. Elm
- b. Cottonwood
- c. Birch
- d. Spruce

**Sample 10**

- a. Sugar maple
- b. Tamarack
- c. Aspen
- d. Cottonwood

**Sample 5**

- a. Basswood
- b. Northern white cedar
- c. Elm
- d. Spruce

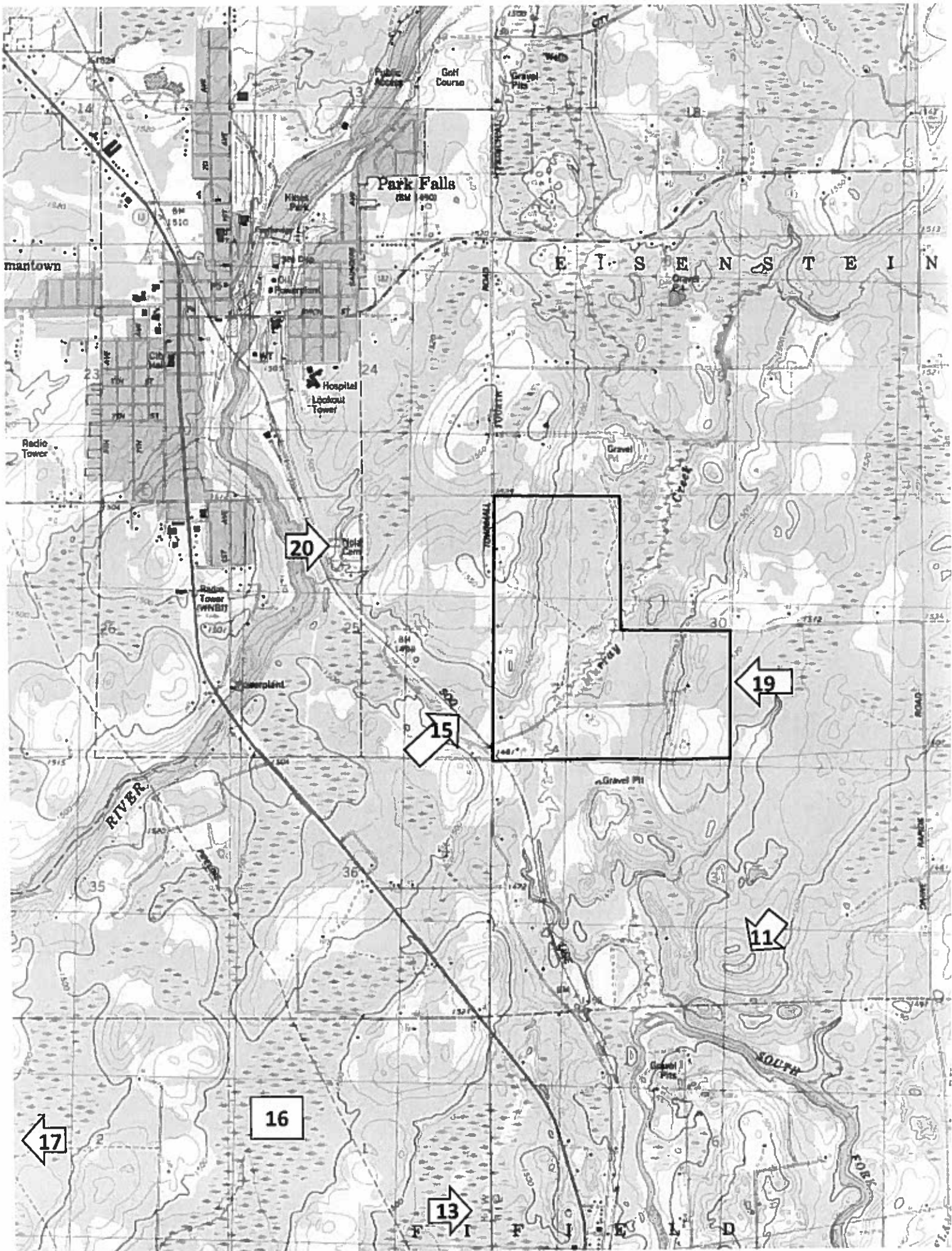
**Sample 6**

- a. Northern white cedar
- b. Hackberry
- c. Black walnut
- d. Tamarack (Eastern larch)

**Sample 7**

## 2018 Minnesota FFA Forestry Contest: Map Interpretation Practicum

11. What is the elevation of the **highest point** in the immediate vicinity of the arrowhead?  
(The contour line near the base of the arrow reads 1500.)
- a. 1506 feet
  - b. 1560 feet
  - c. 1506 yards
  - d. 1510 feet
12. State Rd 70, marked in red and white on the map, runs east-west across the map.  
**Approximately** how long is the portion of State Rd 70 shown on this map?
- a. 15 miles
  - b. 5 miles
  - c. 1 ¼ miles
  - d. 5 km
13. One side of this Range line is marked as R1E, the other as R1W. This line must be a...
- a. Prime minister
  - b. Normal range line
  - c. Prime meridian
  - d. Principal meridian
14. What is the name of the USGS Topo Quad immediately east of the one pictured here?
- a. Blockhouse Lake
  - b. Park Falls
  - c. Manitowish
  - d. Wisconsin
15. The Soo Line runs from the northwest corner to the south central portion of the map.  
What type of road is the Soo Line? The map symbol is something like this: --+---+---
- a. Railroad
  - b. Unimproved forest road
  - c. Historic oxcart trail
  - d. Interstate highway
16. Which of the following best describes the terrain surrounding this point?
- a. Open water wetland
  - b. Forested wetland
  - c. Old growth forest
  - d. Agricultural crop land
17. What is the number of the next section west of the arrow?
- a. 16
  - b. 34
  - c. 1
  - d. 3
18. What is the approximate latitude of the center of section 29, near this point?
- a. 55° N.
  - b. 45° 55' N
  - c. 88° N
  - d. 45° 52' 55" N
19. Approximately how many acres are inside the area delineated in black?
- a. 640
  - b. 1,000
  - c. 480
  - d. 160
20. What is the legal description for the cemetery shown at the arrow?
- a. NE ¼, NW ¼, Section 25
  - b. NW ¼, NE ¼, Section 25
  - c. NW ¼, SE ¼, Section 25
  - d. SE ¼, SE ¼, Section 25





## **2018 Minnesota FFA Forestry Contest: Forestry Tool ID Answer key**

1. 519 (fire rake)
2. 555 (tree caliper)
3. 543 (Pulaski - forester axe)
4. 521 (forwarder)
5. 510 (clinometer)
6. 538 (plant press)
7. 540 (pruning saw)
8. 557 (tree marking gun)
9. 502 (angle gauge)
10. 503 (backpack fire pump)

**2017-18 Spring FFA Forestry Invitational  
ANSWER KEY: Tree ID**

1. 203 Basswood
2. 209 Bur oak
3. 227 White oak
4. 219 Paper birch
5. 213 Hackberry
6. 201 American elm
7. 221 Red maple
8. 223 Silver maple
9. 225 Sugar maple
10. 220 Quaking aspen
11. 205 Black ash
12. 218 Northern red oak
13. 211 Cottonwood
14. 241 White spruce
15. 230 Black spruce
16. 229 Balsam fir
17. 234 Eastern white pine
18. 238 Red (Norway) pine
19. 235 Jack pine
20. 239 Scotch pine
21. 240 Tamarack
22. 236 Northern white cedar
23. 231 Colorado blue spruce
24. 232 Eastern hemlock
25. 233 Eastern red cedar

# FORESTRY CONTEST

## *Compass Course Answer Sheet*

Contestant Name \_\_\_\_\_

Team Number \_\_\_\_\_

School \_\_\_\_\_

Code Number \_\_\_\_\_

**Write your answers CLEARLY in the spaces below, then hand in your completed sheet for scoring. Do not write your answers on the Scantron sheet.**

The compass course will have five marked and numbered positions. Contestants may start at any position and record the compass bearing/azimuth (to the nearest degree) and use pacing to estimate the distance (to the nearest foot) to the next position in numeric order.

Twenty five points are possible, 5 points for each numbered position: three for azimuth and two for distance. One point will be deducted for every two degrees off on the azimuth and for every five feet off on the distance.

All compass readings will come from 0 degrees magnetic north with no correction for magnetic declination. Compasses preset for declination will not correspond with official results.

Positions	Azimuth	Distance
From position 1 to 2	154°	96'
From position 2 to 3	48°	93'
From position 3 to 4	16°	44'
From position 4 to 5	306°	59'
From position 5 to 1	232°	94'

## 2018 April FFA Forestry Contest: GPS Course

Waypoint	Code
1	768
2	258
3	372
4	529
5	656
6	516
7	991
8	313
9	422
10	992
11	760
12	456
13	408
14	567
15	675
16	156
17	462
18	524
19	402
20	290
21	658
22	289
23	814
24	913

**2018**  
**State FFA Forestry Contest – Wood ID**  
**ANSWER KEY**

1. D
2. A
3. C
4. A
5. B
6. D
7. B
8. A
9. B
10. D

**2018 Minnesota FFA Forestry Contest: Map Interpretation Practicum  
Answer key**

- 11. b
- 12. b
- 13. d
- 14. a
- 15. a
- 16. b
- 17. d
- 18. b
- 19. c
- 20. a

**2018**  
**State FFA Forestry Contest – Forest Business Management**  
**ANSWER KEY**

1. C
2. B
3. C
4. A
5. B
6. D
7. B
8. C
9. C
10. B

**2018**  
**State FFA Forestry Contest – Timber Cruising**  
**ANSWER KEY**

<b>Tre e No.</b>	<b>DBH</b>	<b>Merchantable Height (num. of 16-foot logs)</b>	<b>Sawlog Volume</b>
1	12	1.0	47
2	18	3.0	280
3	12	2.0	75
4	12	2.0	75
5	15	2.0	136
6	13	0.5	34
7	14	1.0	69
8	15	1.5	109
9	28	